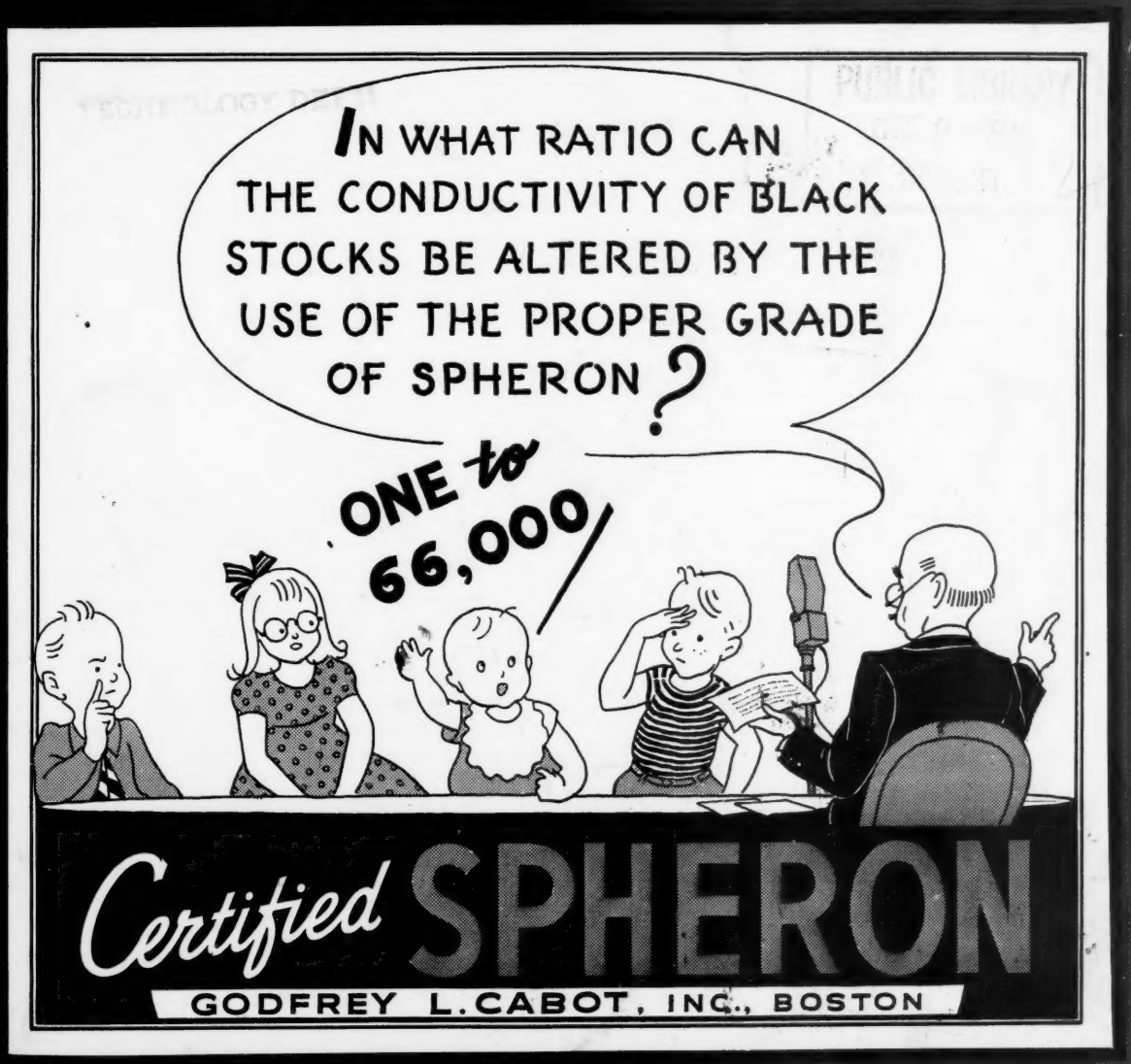
UBBER
RLD

OCTOBER 1, 1941


IN WHAT RATIO CAN THE CONDUCTIVITY OF BLACK STOCKS BE ALTERED BY THE USE OF THE PROPER GRADE OF SPHERON?
ONE to 66,000
Certified SPHERON
GODFREY L. CABOT, INC., BOSTON

THIS IS WHY

2-MT-808 IS OUTSTANDING

IN TRUCK TIRE CARCASS STOCKS!

COMPOUND NO. 1251	Old Way Straight Thiazole —456	Present Way Accelerator No. 8 Activated Thiazole —460	New Way 2-MT-808 —457
It is cool running*			
Temperature rise on Goodrich flexometer	32°C.	24°C.	24°C.
It stays cool running*			
Temperature rise on Goodrich flexometer			
After aging 35 days 70°C. air oven	28°C.	24°C.	22°C.
After aging 14 days 70°C. Oxygen Bomb	Blew out	120°C.	46°C.
It has high modulus* (stress at 500% elongation psi)	1000	1400	1300
It has high tear resistance* (pounds)	10	24	25
It resists aging*			
% tensile strength retained after 28 days in 70°C. Oxygen Bomb	25%	42%	63%
% tensile strength retained after 4 days in 100°C. oven	17%	13%	29%
It is good when hot*			
Tensile Strength @ 100°C.	3500	3600	3900
Tear Resistance @ 100°C.	8	8	12

*Cured 60 min. @ 267°F.

IT IS THE LEAST BRITTLE WHEN HOT

COMPOUND NO. 1251	—456	—460	—457
Smoked Sheets	100.	100.	100.
Zinc Oxide	50.	50.	50.
Stearic Acid	1.5	1.5	1.5
Pine Tar	1.	1.	1.
NEOZONE D	0.5	0.5	0.5
THERMOFLEX A	1.	1.	1.
Sulfur	2.75	2.75	2.75
2-MT	—	—	0.6
ACCELERATOR 808	—	—	0.05
ACCELERATOR No. 8	—	1.	—
ZENITE	—	0.4	—
MBT	0.75	—	—
Cure	70 minutes @ 267°C.		

6 ADVANTAGES OF 2-MT VULCANIZATES

1. Higher modulus with less combined sulfur.
2. Less tendency to revert or exhibit other undesirable effects of long curing.
3. Better age resistance as judged by the oxygen bomb, air pressure heat test and 70°C. or 100°C. air oven.
4. Higher tensile strength and tear resistance at elevated temperatures, even when cured well beyond the optimum.
5. Greater resistance to flex cracking
6. Less hysteresis (lower heat build-up).

For further details see 2-MT Report 41-1

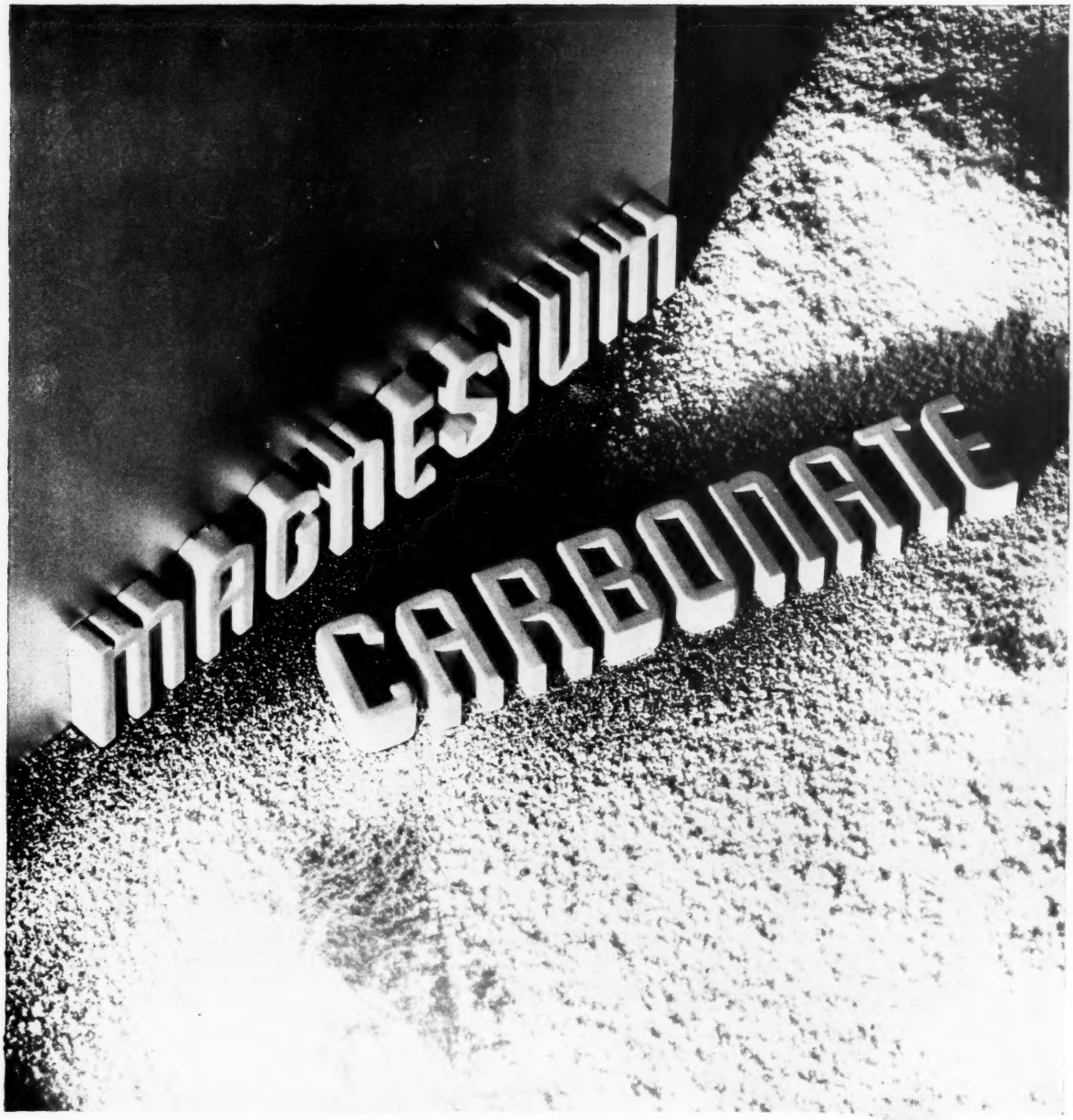
DU PONT

RUBBER CHEMICALS DIVISION

E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON, DELAWARE

India Rubber World, October 1, 1941, Vol. 105, No. 1. Published monthly by Bill Brothers Publishing Corp., 420 Lexington Avenue, New York, N. Y., U. S. A. Entered as second class matter October 5, 1889, at the Post Office at New York, N. Y., under the act of March 3, 1879. Subscription, $3.00 a year domestic; Mexico, $3.50; all others, $4.00; single copies, 35 cents.

TECHNOLOGY DEPT



WHEN used in the production of rubber articles, the value of a magnesium carbonate depends to a great extent on its degree of transparency. To meet the stringent demands of rubber manufacturers, Wishnick-Tumpeer, Inc., has developed a magnesium carbonate that is one of the most transparent that can be obtained in the market. Our staff will gladly assist you in using Witco Magnesium Carbonate as a reinforcing filler and anti-acid in your products.

Mail the coupon for further information on Witco Magnesium Carbonate and other Witco products.

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WISHNICK-TUMPEER, INC.
295 Madison Avenue, New York, N. Y.

Gentlemen: Please send me a free copy of WITCO PRODUCTS. I am interested in the following:

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- ☐ Witco Blanc Fixe
- ☐ Witco Barytes
- ☐ Witco Witcarb
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Our own development in steel alloy provides a hard surfacing that resists abrasion longer than original surface. Many tests prove this. On rotors and parts of the mixing chamber INTERSTATE Hard-Surfacing assures greatest mixing efficiency over the longest period of service.

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B-L-E POWDER Highest flexing qualities with excellent heat and oxygen aging.

B-L-E General application giving most effective balance of flexing, heat and oxygen aging qualities.

AMINOX Powdered antioxidant with same general characteristics as B-L-E but with less discoloration.

BETANOX Very effective antioxidant with minimum residual odor in rubber and minimum discoloration of fabrics, lacquer, etc.

B-X-A Powdered antioxidant used, for example, in tire treads and carcass, shoe soling, wire insulation, footwear.

V-G-B First commercial non-accelerating antioxidant still widely used in molded products, roll covers, specification goods and Latex.

M-U-F Minimum discoloration with highly effective antioxidant properties. Special resistance to the effects of copper and manganese. Also used in synthetic rubbers.

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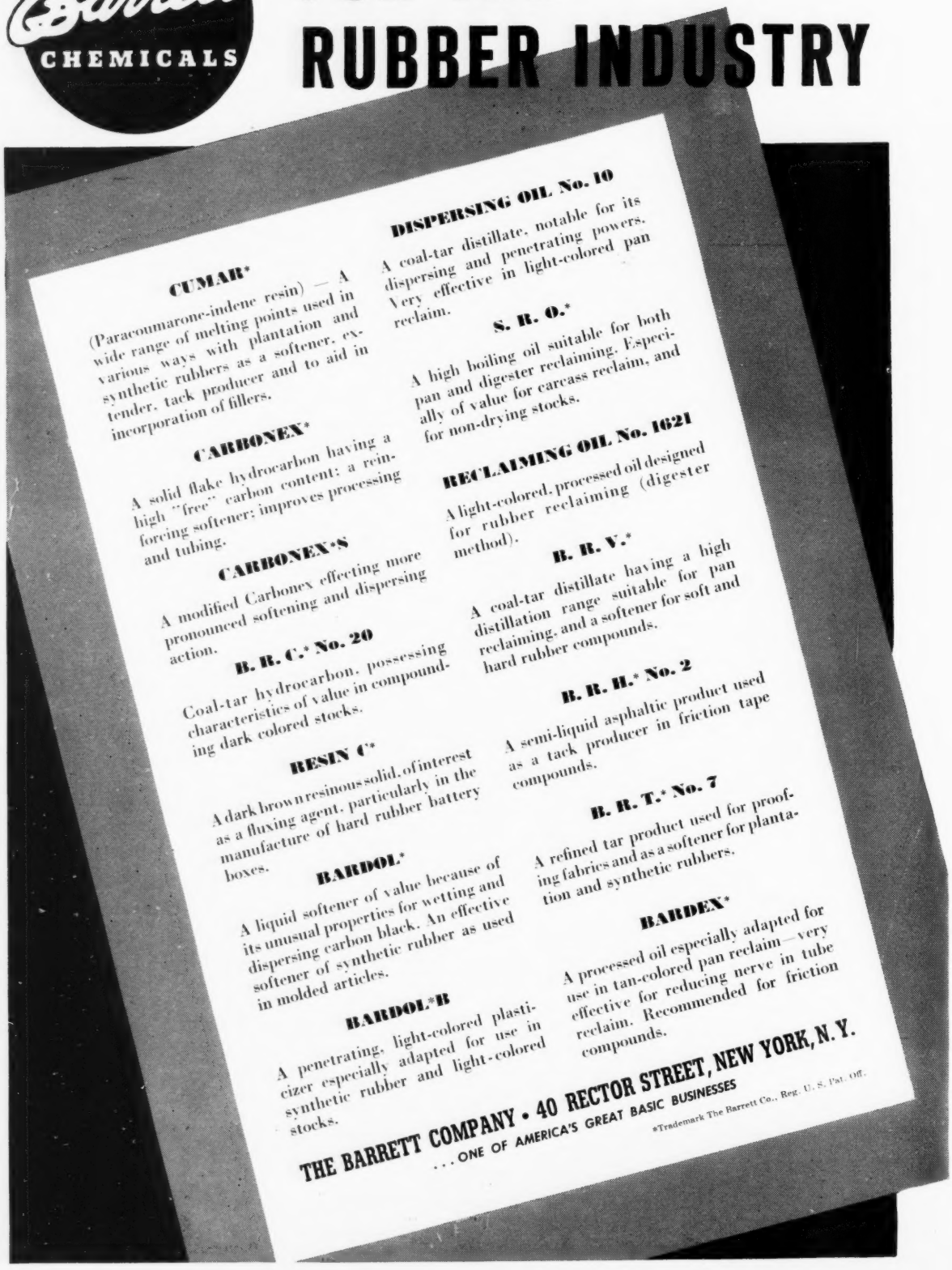
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A solid flake hydrocarbon having a high "free" carbon content: a reinforcing softener; improves processing and tubing.
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A dark brown resinous solid, of interest as a fluxing agent, particularly in the manufacture of hard rubber battery boxes.
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A liquid softener of value because of its unusual properties for wetting and dispersing carbon black. An effective softener of synthetic rubber as used in molded articles.
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We consider it a happy privilege to do this and, although present national and world-wide conditions offer many obstacles to smooth forwarding of work in our business, our accomplishments thus far in 1941 have been gratifying.

During the period beginning January 2, 1941 and ending with the close of business September 10, 1941, this Company shipped 3,112 orders for small machine units, tools and accessories - in addition to the manufacture and shipment of 123 complete major machines and accompanying accessory equipment. These totals do not include undelivered orders.

Here, needs of those engaged in National Defense Work have the right of way, with O.P.M. priority ratings rigidly adhered to.

It is felt that our friends deserve to know that we are cooperating wholeheartedly in the preparations for the defense of our Country and that we have been working steadfastly to meet the needs of the industries we so proudly serve.

Your inquiries are welcome and we will continue to give them our closest attention, first - because we realize that we need one another, secondly - because all of you have proved to be such grand folks to work with.

Cordially yours,

JOHN ROYLE & SONS

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(A problem solved by Pequanoc technicians for a wire covering concern.)

An insulated wire manufacturer asked us why he was getting blisters in his rubber covered wire.

What caused them? Many suggestions had been offered to him by outsiders as well as by those in the plant:

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In many cases any one of the suggested changes would have cleared up the trouble. But in this particular case none of these changes made any difference.

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The steam leak was sealed — and the trouble ended.

We do not lay any claim to omniscience, but often an outside viewpoint is of real assistance. Our technicians, thoroughly familiar with the use of reclaimed rubber in compounding, are at your service to assist in solving your manufacturing problems.

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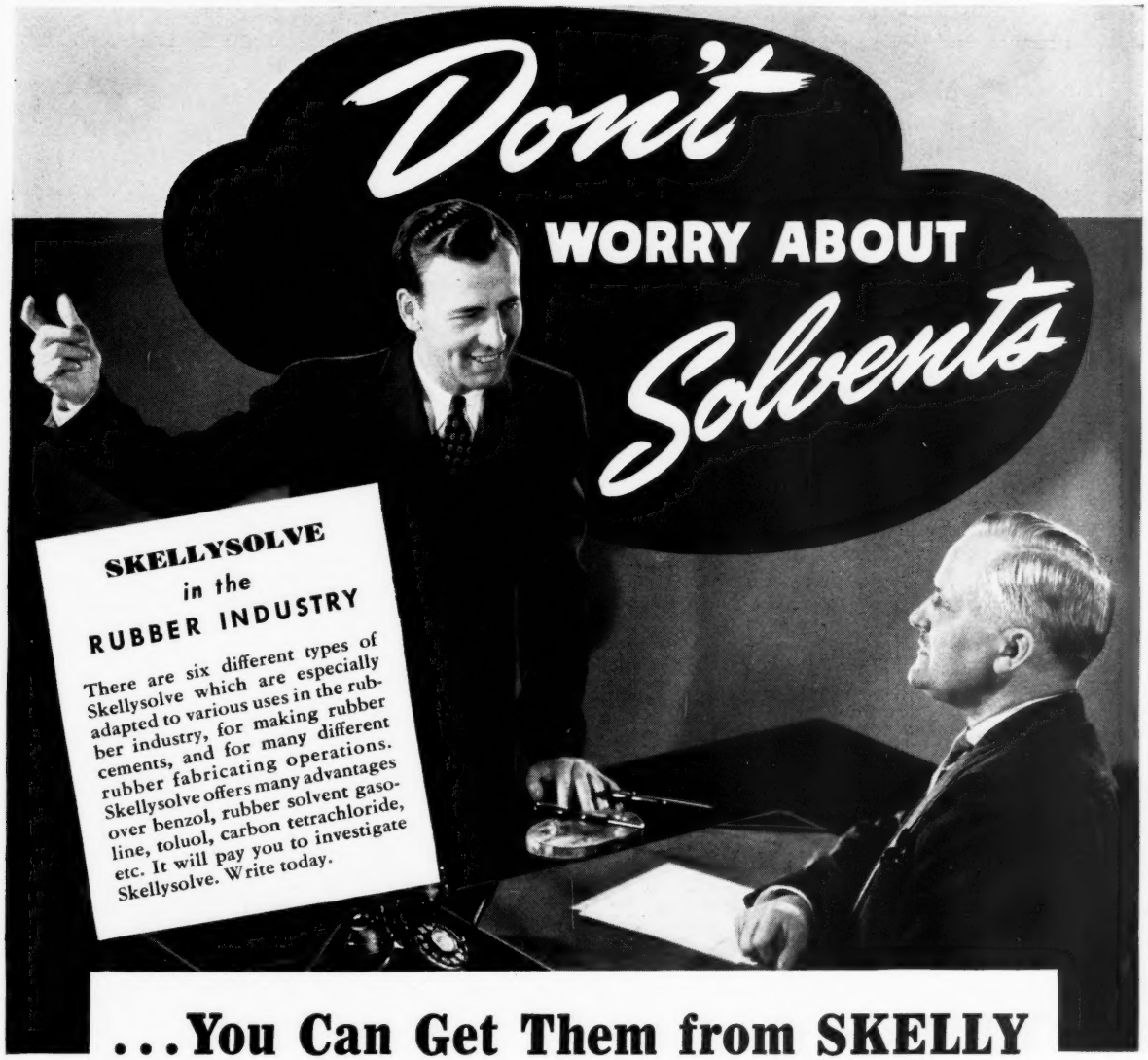
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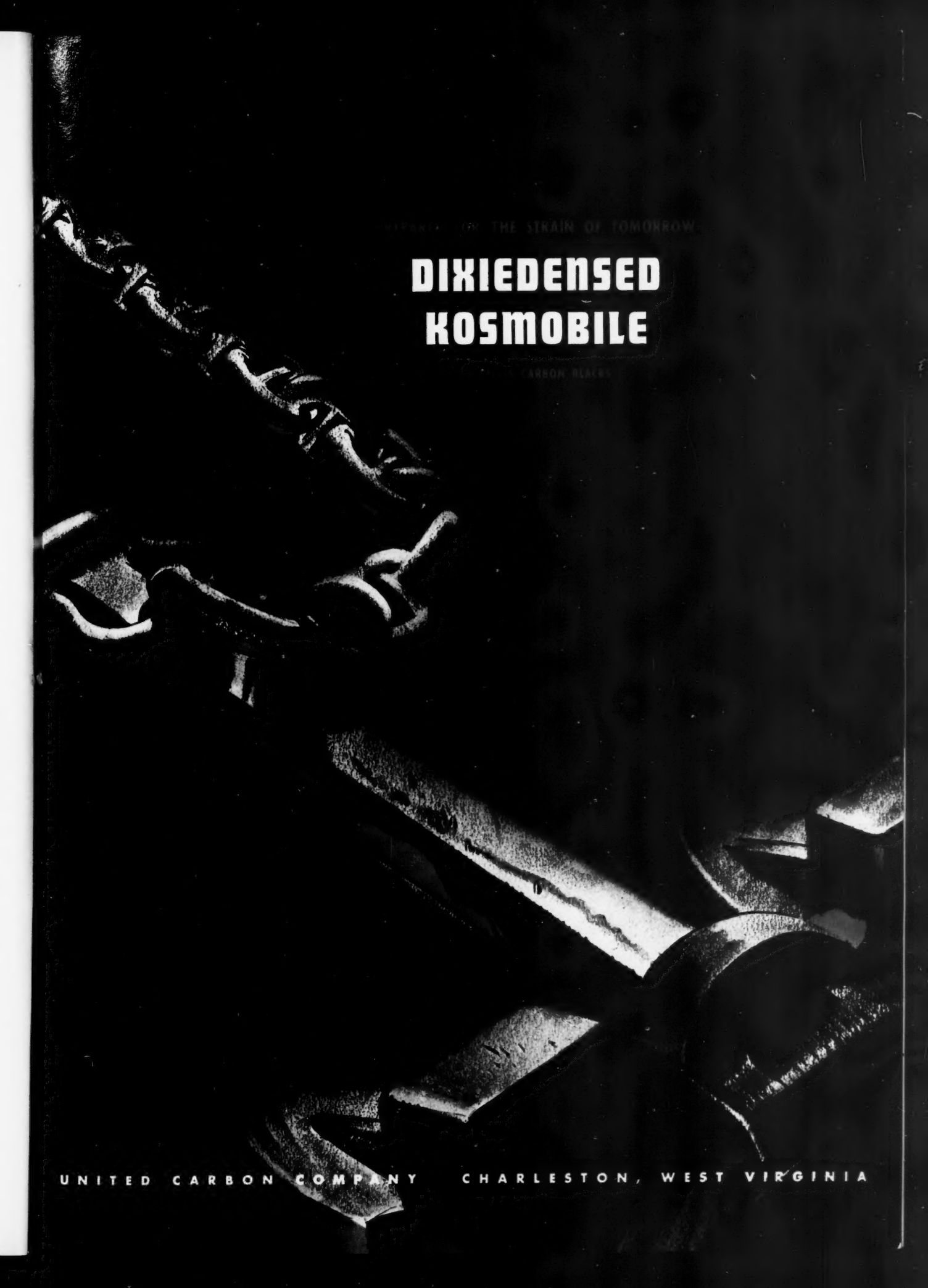
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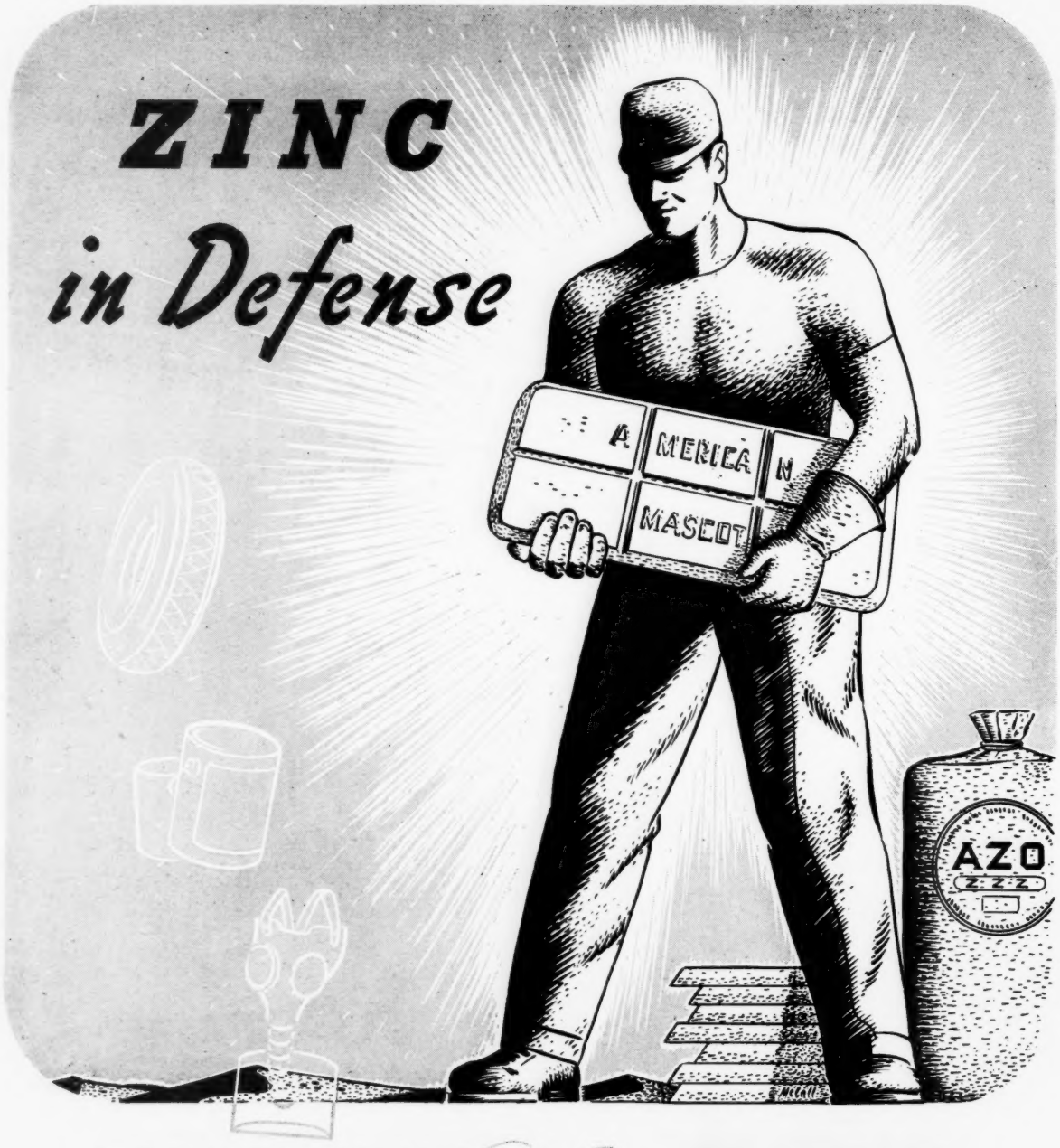

In a thousand ways zinc is vital to the nation's defense program. The brass for shells is one-third zinc. Alloyed with aluminum, zinc helps build airplanes. The zinc which covers galvanized metal equipment protects it from rust and corrosion. In sheet form zinc makes batteries and boiler plates. Zinc oxides are vital in the manufacture of rubber tires, gas masks, paint products, and many other defense items.

Though defense comes first, the American Zinc industry is employing every available facility in an "all out" effort to satisfy the unprecedented demand for every zinc product.

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with **SUN RUBBER PROCESSING OIL**

Defense demands and curtailed supplies are causing many compounders of natural and chemically produced rubber to search for new formulae to help stretch their present rubber stocks, without impairing product quality. And many have already found the answer in a change to SUN CIRCO LIGHT Processing Oil.

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- **LOWER COST OF COMPOUND**
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- **MAKE PROCESSING EASIER**

Interested in stretching your present rubber stocks? . . . revising your formula? . . . cutting production costs? Then you'll find it worthwhile getting full details on CIRCO LIGHT. Write:

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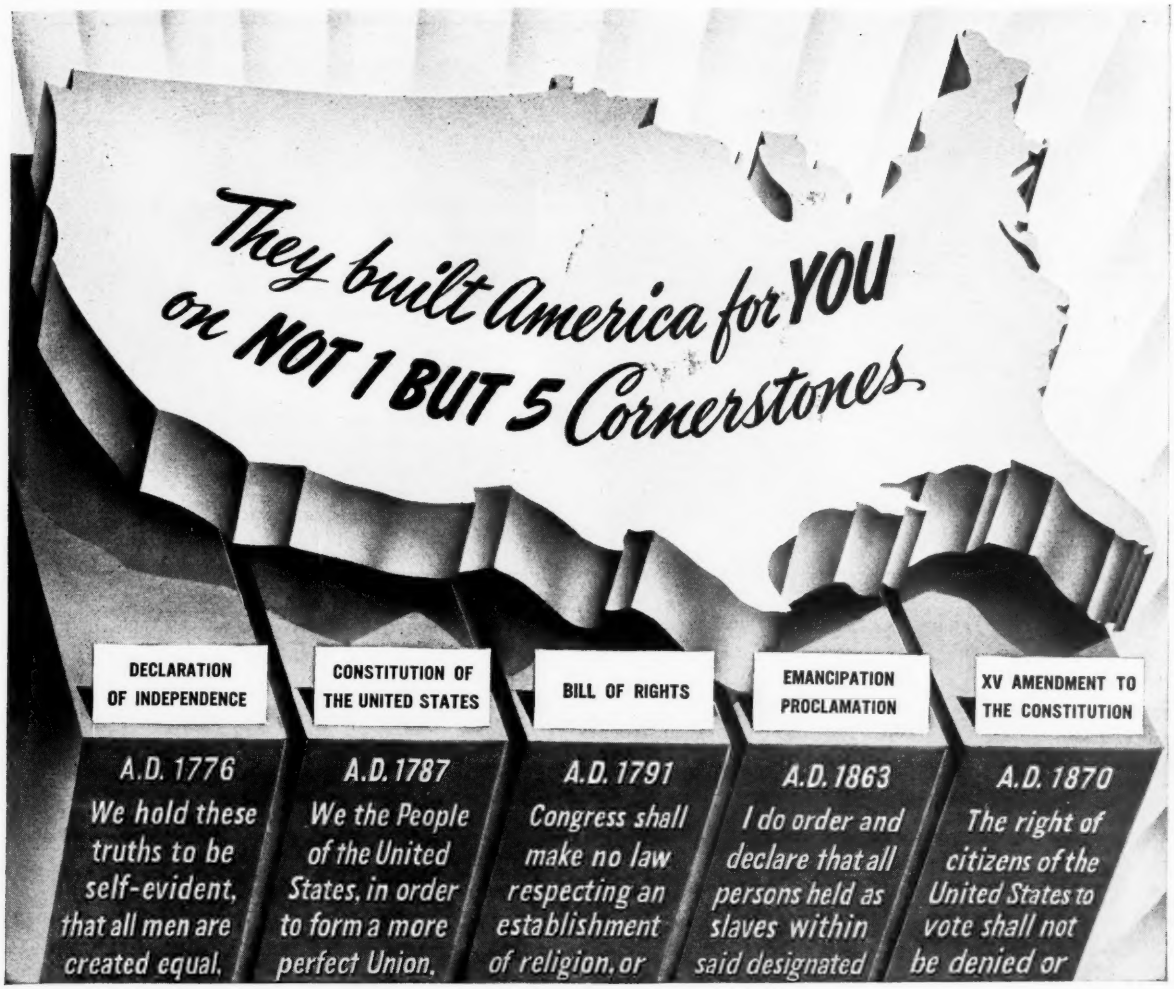
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on NOT 1 BUT 5 Cornerstones
DECLARATION OF INDEPENDENCE
A.D. 1776
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CONSTITUTION OF THE UNITED STATES
A.D. 1787
We the People of the United States, in order to form a more perfect Union.
BILL OF RIGHTS
A.D. 1791
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EMANCIPATION PROCLAMATION
A.D. 1863
I do order and declare that all persons held as slaves within said designated
XV AMENDMENT TO THE CONSTITUTION
A.D. 1870
The right of citizens of the United States to vote shall not be denied or

YOUR U. S. A. HAS ALWAYS DEPENDED ON NOT 1 BUT 5

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America's worth protecting. It's so *rightly* built. This nation stands solid on five cornerstones of freedom... *not one cornerstone, but five.* We demanded the right to *be* free, and dared to declare our everlasting Independence. We wanted a workable plan to secure the Blessings of Liberty, so we wrote ourselves a Constitution. We wanted to guard and shield these liberties, and added the Bill of Rights. We wanted freedom for *all* Americans, so we issued a Proclamation of Emancipation from slavery. We knew that all free men must have the right to vote, so we guaranteed that right by the Fifteenth Amendment. The U. S. A. you love today depends on not one but five.

In times like today, a company like Taylor is just like the rest of America. It so happens that here at Taylor Instrument Companies we have some special skills, some extra experience, some engineering knowledge, some materials that Uncle Sam thinks pretty useful. He's using them. Naturally, these new activities have changed the normal picture. We have had to postpone, for the time being, some of our ordinary activities. You understand. Everybody's at work defending us all—we're on "the big job" with you.

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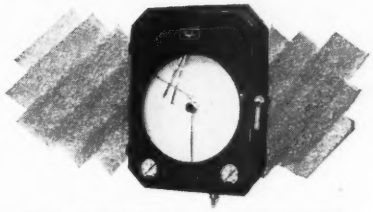

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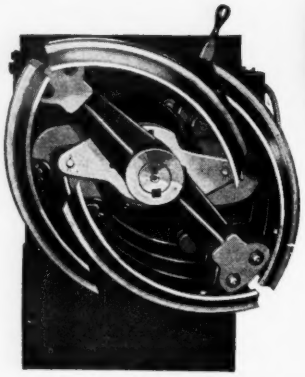
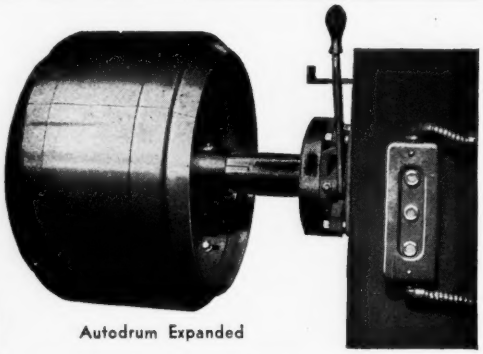


Autodrum Collapsed



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Canadian Patents 231,059 and 248,915

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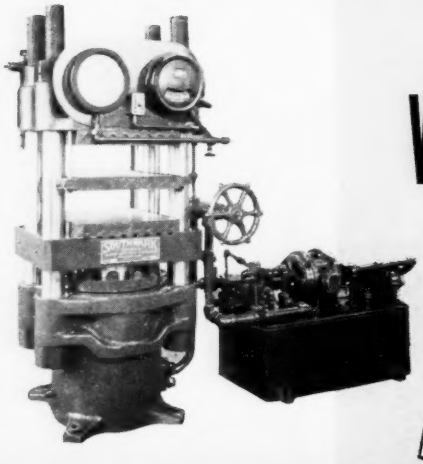

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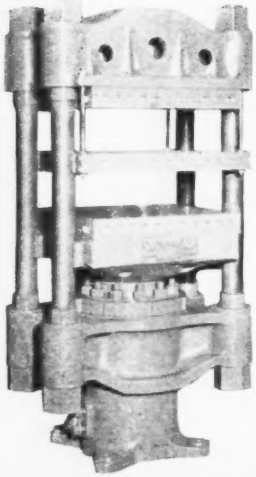

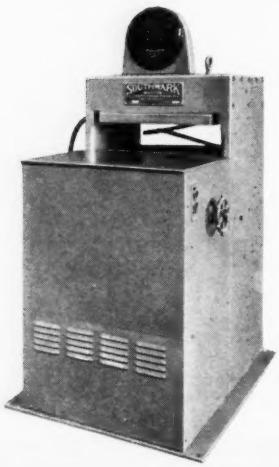

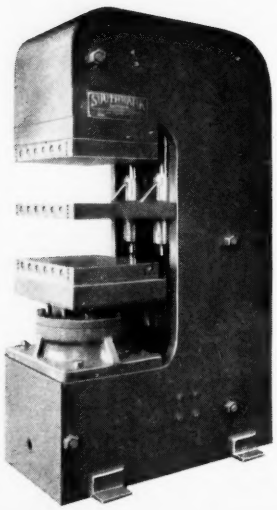

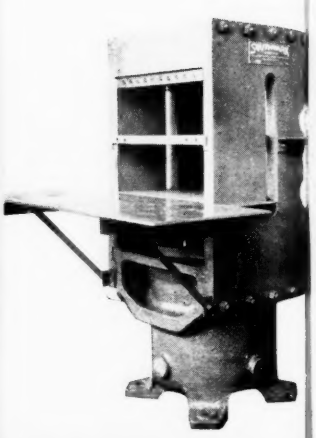

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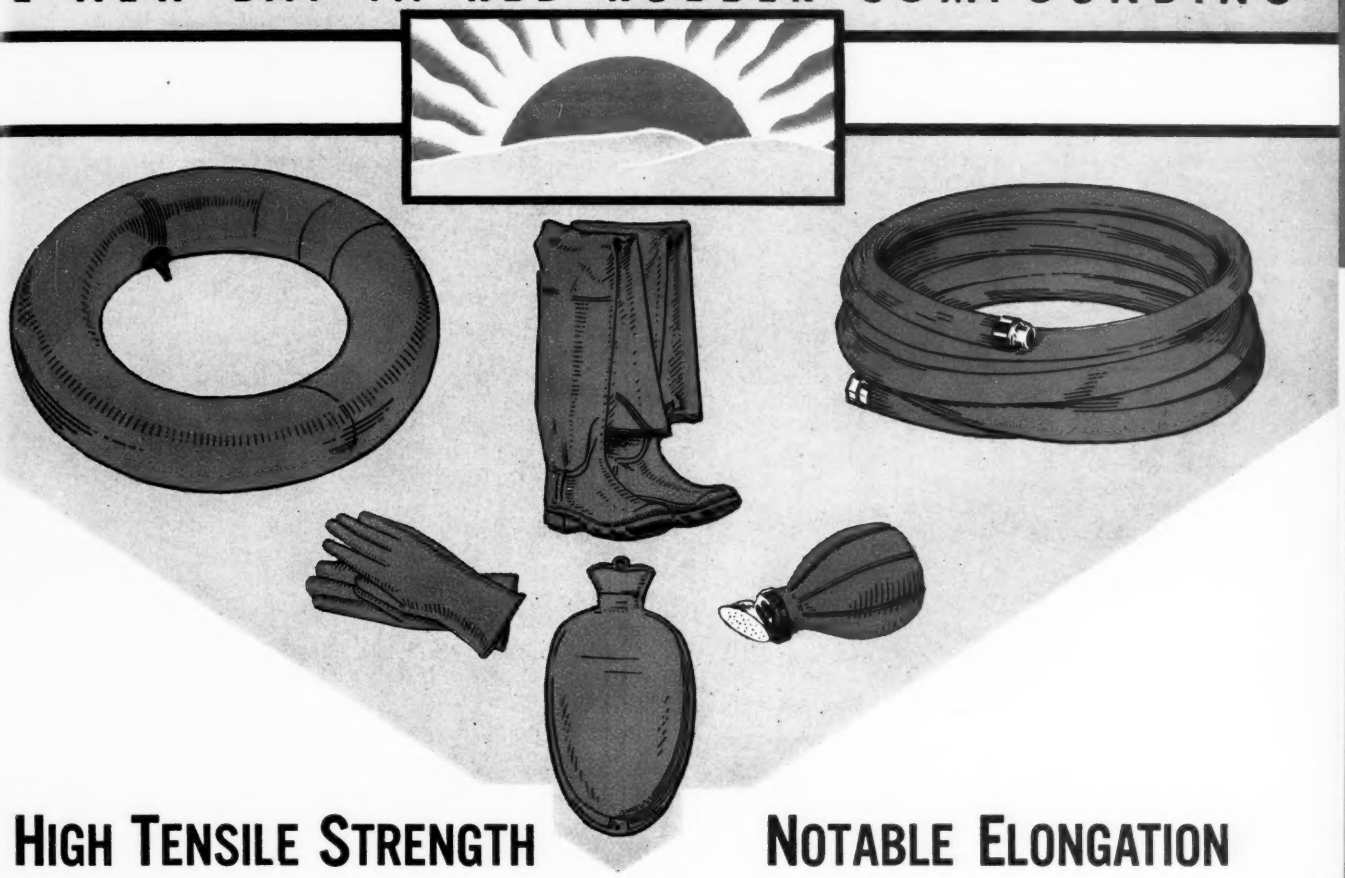

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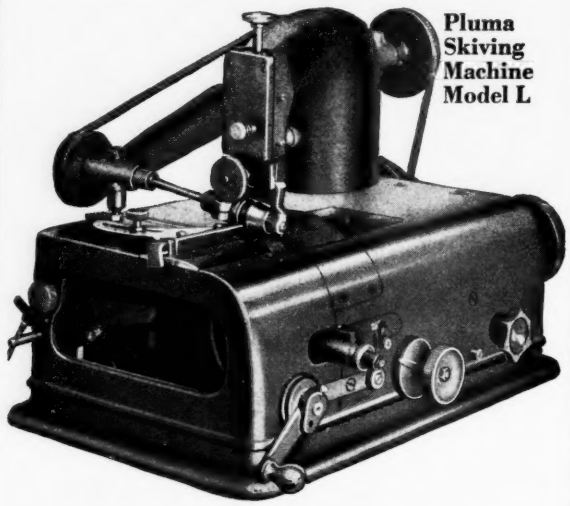

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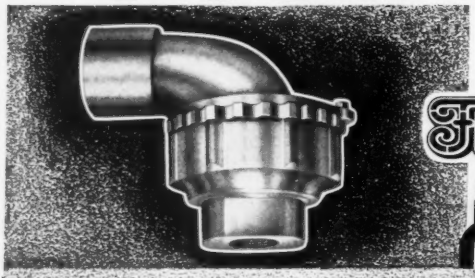

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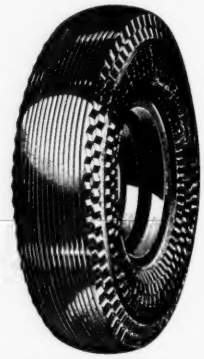

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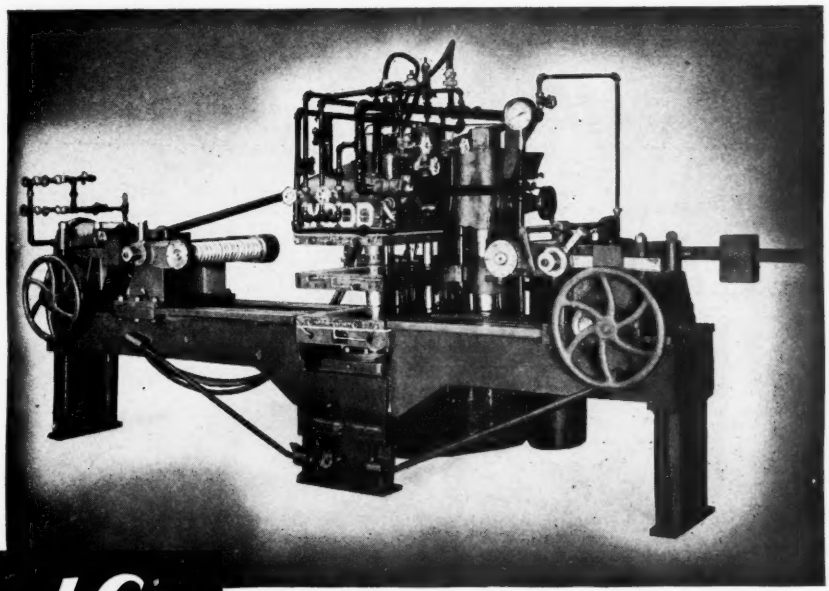

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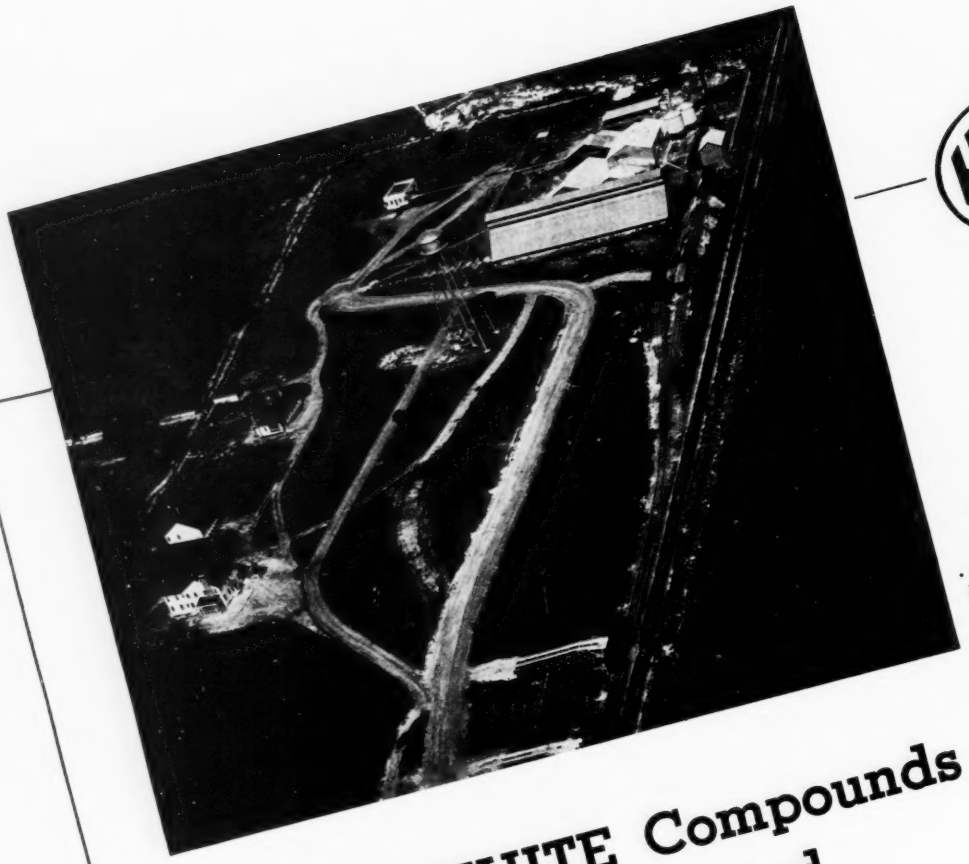

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INDIA RUBBER WORLD

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Volume 105 **New York, October 1, 1941** **Number 1**

The Cultivation of Guayule—I

W. B. McCallum[1]

OF THE large number of plants that are known to produce rubber the actual commercial production is confined to essentially two, the *Hevea Brasiliensis* and the *Parthenium argentatum*, or guayule. The former, a large tree, had its origin in the valley of the Amazon and its tributaries in Brazil and has been transferred artificially to the islands of the Far East where now some 8,942,000 acres are planted, with essentially 8,000,000 acres in bearing. The total possible annual production, when all are in bearing, will be well over 3,500,000,000 pounds.

The guayule, a native of northern Mexico, is a rather heavy, woody shrub and has contributed for many years up to 10,000,000 pounds of dry rubber per year. The rubber in *Hevea* is in the latex system and constitutes at any one time but a small fraction of 1% of the total weight of the tree; and in the guayule it is in all the living cells except the leaves, and in the better varieties amounts to 22% of the dry weight of the plant.

Historical

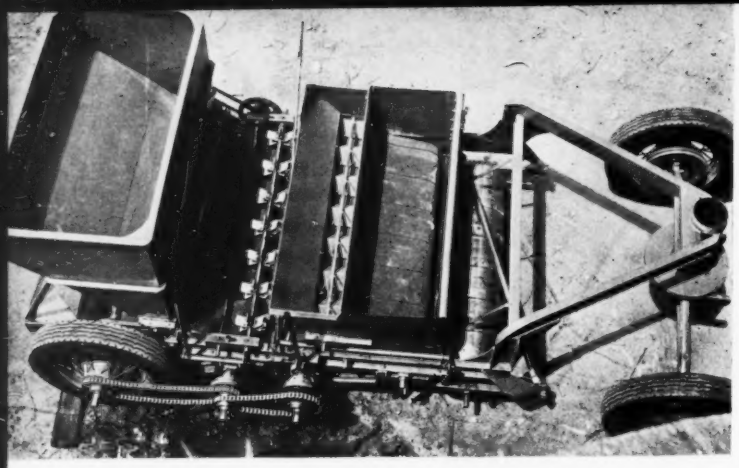
Although some previous attempts had been made and small amounts of rubber marketed, the guayule business was really established in 1904 as a result of the ingenious work of W. A. Lawrence in utilizing the pebble mill, with water, as the means of extracting the rubber from the shrub. The first factory was established in Torreon, Mexico, in 1904 with a capacity of 1,000,000 pounds of wet rubber a month. This factory continued in operation with various improvements until 1915 when the 150 individual pebble mills were replaced by long tube mills which permitted the much more efficient system of continuous operation. A little later factories were built at Cedros and at Catorce, which have been in almost continuous operation since.

Almost from the beginning the Intercontinental Rubber Co. looked forward toward replacing the diminishing supply of natural shrub with that grown on plantations. In 1911, I joined the company to continue the work so well started previously in 1908 by F. E. Lloyd. Shortly

[1] Chief botanist, Intercontinental Rubber Co., Salinas, Calif.

Six-Month Nursery Seedling in Bloom, Showing Flowers and Root Development

Four-Year-Old Mature Field Plant Cultivated in California



Latest Type of Nursery Seeder, Which Puts the Seeds in Rows Instead of Scattering Them

after this revolutionary disturbances in Mexico became so acute that the experimental fields at Cedros and elsewhere had to be abandoned. In the meantime the potential importance of the work was realized by the company, and I was authorized to salvage as much seed and other material as possible and start up again in the United States. This was

Section of Nursery Planted June 15-30, 1941, and Photographed August 9

done in 1912, 36 years after Sir Henry Wickham got the first *Hevea* seeds out of Brazil and started growing rubber in the Far East. Already the world's rubber supply was beginning to shift from the wild to cultivated sources, and we saw in guayule enormous possibilities.

Topping Seedlings After Eight Months in Beds

General Characteristics of Guayule

The shrub belongs to the *Compositae* family, and to the genus *Parthenium*. The species is *Parthenium argentatum* from the gray silvery appearance of the leaves. It is native to the plateau region of north central and northern Mexico, ranging in a broad zone from the State of Zacatecas to the north Mexican border and extending into the Big Bend region of Texas. Although it extends over a very large region, the shrub covers only a small part of the total area, for it is confined strictly to the limestone soils that are in this area. The plant generally confines itself to altitudes of between 3,000 and 7,000 feet, with an average annual rainfall of about 10 to 15 inches. This only means that under such conditions the plant can grow naturally and compete successfully with the other native vegetation and has no relation to the places where it will grow if the competition of other plants is removed. On very sandy soils, however, the production of rubber is materially reduced. In general, the shrub's reaction to soils is similar to that of other plants. On a good soil with sufficient moisture it produces a large growth, but on a poor soil, or with insufficient water, the growth is correspondingly reduced. Of course in considering the various factors that go to make up a suitable environment, it must be kept in mind that any one factor has a vastly different significance in different combinations of conditions. For example, at Salinas, Calif., where our main plantings are at present, the dominant winds are off the ocean and the air is fairly damp; so we can plant and get a good growth on 12 inches of rainfall annually. But in the interior valleys where the whole summer climate is vastly hotter and drier, the same amount of rainfall will not produce more than half of the Salinas tonnage per acre.

Being an evolutionary product of the semi-arid desert, the plant has the characteristics that adapt it to that arid environment. In its native regions it is a woody shrub about two feet high, with a dry weight of rarely more than one or two pounds. It is a hardy perennial and under undisturbed conditions lives probably 30 or 40 years. It has small composite flowers which under proper conditions produce abundant seed, but in dry years produce practically none. The seeds are very minute, averaging about 600,000 per pound. Like many plants of its type, its power of vegetative reproduction are rather weak or at least not usually brought into action, although occasionally plants can be seen that came up from underground runners. In its natural habitat its growth is quite slow so that an average five-year-old plant will usually weigh less than a pound, dry weight, but given good conditions of soil, climate, and moisture the growth becomes many times as fast.

One of the most important characteristics of the plant and essential, of course, to its native habitat is its capacity to withstand long continued and extreme drought. There are records of places in Mexico where essentially no rain has fallen for several years, but when the rains came the plants picked up and were active in a day or two. This capacity to withstand extreme drought, however, has misled some people to consider it as a suitable plant to establish on the arid soils of our southwestern deserts; but, as with any other plant, if there is to be a fairly continuous growth, there must be a fairly continuous supply of moisture in the soil. While guayule, if once established on our more arid desert soils, might survive for quite a long time, the total growth without some irrigation would be too slight to pay for the operation.

A certain amount of frost and the period of dormancy thereby induced appears to increase the amount of rubber in the plant, although fairly high percentages have been obtained without it. We do not know what the frost

limitations of the plant are, but have seen it growing without injury where the temperature went down to 5° F. Much depends on the condition of the plants, for frosts of 20° F., coming on suddenly in the early winter with the plants still lush and tender, have injured them, but not seriously. In Arizona plants have withstood 10° F. without injury. Like most other plants, the ability to withstand low temperatures depends largely on the condition of the plants, and if caught when lush and tender, they may be severely injured or even killed by temperatures to which they are entirely immune when well hardened up.

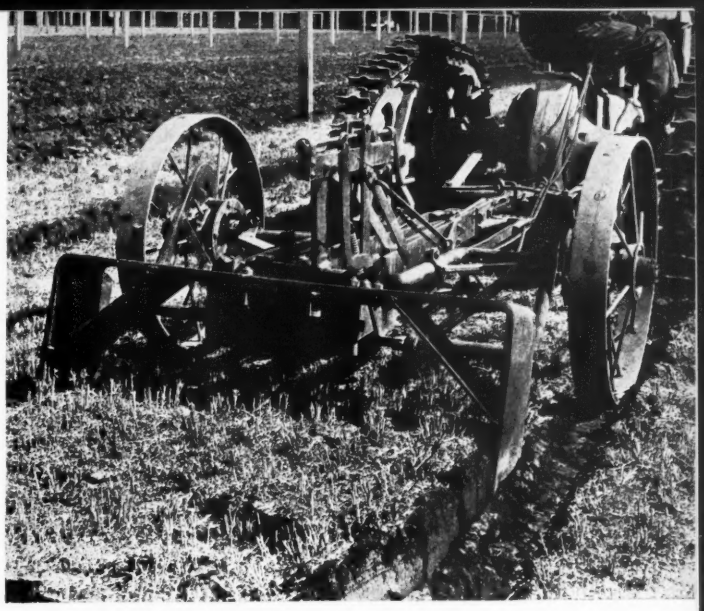
The reproduction of the plant in nature is almost entirely by seed although it is not uncommon to see plants shooting up from the shallow roots that run out from the older plants. This is particularly true when the long shallow underground roots have become exposed by the washing of the soil. The production of the small seed depends on the rainfall during the summer. With good rains considerable seed is produced, and in very dry years practically none at all. The seed in general is fairly fertile and, in the dry climate to which the plants are native, retains its vitality for many years. However, it is very difficult to germinate the seed, and germination is spread over a number of years.

The Problems of Domestication

Growing in a semi-desert region, one of the most important characteristics of the plant is its highly developed capacity to withstand severe drought and its ability to maintain a fair amount of growth with a relatively low water content. This allows it to grow in regions of fairly low rainfall, which in turn strictly limits its possibilities in those regions of producing large yields per acre. From the beginning it was evident, from the many plants brought from the range and grown with liberal irrigation, that when the growth was greatly accelerated, the rubber content dropped to an almost negligible value. Thus the broad problem that presented itself at the beginning was the transference of such a plant from its desert environment to conditions of intensive cultivation without impairing the all-important function of rubber formation, which appeared to be a response to dry conditions and retarded growth. A universal conviction at the time, arising from the inability to get the seed to germinate, was that the latter did not germinate and that the reproduction of the plant was altogether by vegetative methods. Therefore the two outstanding questions at the start were: could the plant be reproduced in a practical way on a large scale, and could it be made to produce sufficient rubber under conditions of accelerated growth? The final solution of these two problems afforded the means of producing a system of culture that allowed the plant to take its place as an important and practical source of rubber under cultivation.

Germination of Seeds

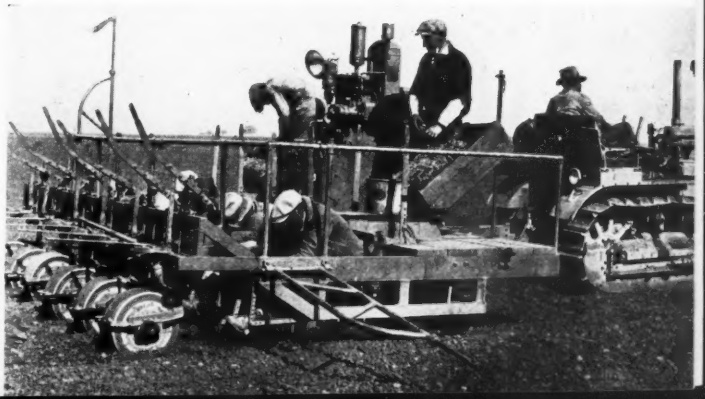
A few words on the accomplishment of germination may be given. While I had no doubt from the beginning that the reproduction on the range was at least in the main by seed, yet they afforded such difficulty in germination that the first serious attack on the reproduction of the plant was by vegetative means. Many thousands of cuttings were tried in various ways, from plants in all sorts of condition, and at all times of the year, but less than one in a hundred was ever made to root, and these plants were notably lacking in energy and vitality. So this effort was finally abandoned, and all attention given to the question of seed vitality. It was found that, grown under the



Digging Seedlings from Nursery Beds

Field Gathering Box of Topped Seedlings (*Front*) and a Large Box Containing Plants Packed in Moss for Storage and Shipment

Six-Row Machine Transplanting 14,000 Seedlings an Hour



proper conditions, most plants would produce a large amount of seed, and that the seed had apparently good though very small embryos; but, as if to register its determined objection to domesticated ways, they refused to germinate, at least in sufficient amount to be of practical value. This was not due to the more common cause of delayed germination, that is, impervious seed coats, for the coats were perfectly pervious to both air and water. The detailed studies along this line need not be gone into here; suffice to say that the ultimate trouble finally was found, and the means of overcoming it determined so that we were able to germinate the seed promptly and completely.

Production of Plants for Transplanting

After having found out how to make the seed germinate freely, the next step was to produce seedlings on a large scale that could be transplanted to the field and grown. In this we ran into very serious difficulties, which took a number of years to overcome. The natural habitat of the plant, and the only one to which it had been exposed, was a loose limestone soil, well aired, and void of humus or organic matter. Owing to the low rainfall and high evaporation the surface of such a soil dries quickly. The sanitary conditions in such an environment are perfect and resistance to various soil diseases plays no part in the struggle for existence. So that while the seedlings on the range were especially devised to resist conditions of drought, they had developed little resistance to damping off and other similar diseases that are common to soils with more organic matter and more moisture. The natural growth of the plants is very slow; at a year old they are rarely more than two or three inches in height and with a long, but fine root. Thus to produce plants in the nursery in large numbers and of sufficient size in one year to withstand the conditions of field planting on a large scale, required crowding in nursery beds, with artificial conditions of rich soil, abundant moisture, and general forced growth. The results at first were very disappointing, and the loss from damping off and other causes in the beds and from the inability of the plants to grow, when set out in the field, amounted commonly to 75% of the total number of plants.

In time the selection of proper nursery soil, rigid refraining from the use of manure or organic fertilizers, the selection of the proper varieties of guayule, and the strict regulation of watering, overcame the problem of loss in the nursery; but we still had great difficulty in getting the plants to give a good stand when planted in the field. The cause lay in the apparent inability of the young plants to root freely when taken out of the favorable and rather forced conditions in the nursery. For several years this obstacle proved to be the most serious we had encountered in our efforts to grow the plants. So a comprehensive study of the whole question of vegetative reproduction in the plant was undertaken. In the various physiological correlations that determine the conditions of activity or dormancy of the various parts of the plant, certain natural tendencies of growth were found that could be taken advantage of in producing a plant that would grow well when transplanted. In its natural condition the first root formed by the seedling is a long slender deep tap root with almost no laterals at all. This permits the root to get down quickly to a more permanent condition of moisture and establishes the plant well in the ground. But this type of root is not suitable for the older and larger plants, for in a region of low rainfall, such as guayule inhabits, the moisture in the ground is universally shallow. Because of this condition the single tap root is soon replaced by a widely extended, shallow, much-branched lateral root system. During the transition from the tap root to the lateral root system the tendency to develop lateral roots is very vigorous. After considerable experimenting and experience, it was found possible to develop a suitable nursery bed plant and have the plant in a physiological condition of strong lateral root development at a time coincident with the planting season. Such plants root with ease, and we were able to get a satisfactory stand in the fields. A stand with a high degree of perfection is now possible to obtain by the elimination of a large number of varieties that rooted with difficulty and were not so satisfactory in rubber, and their replacement by a few varieties that under this system root freely.

The plants are grown in beds four feet in width and 195 feet long. The beds are separated from one another by eight-inch boards upon which the machinery for final preparation and seeding runs. After the boards are laid down the machinery for working the beds and making the surface smooth is used, and then the seed is sown. The seed is treated previously and presprouted so that when sown it is just starting to germinate. A machine sows the seed and covers it with a layer of essentially $^1/_{10}$-inch of sand in one operation. This machine will sow and cover with sand 150 beds a day, which in turn will produce enough plants for 375 acres when set out in the field. An overhead spray system is used which waters the beds uniformly and with very little labor. The seed is best sown in February, March, and April, and the plants are ready for the field the following January.

The plants are set out in the field by especially devised and constructed planting machines at the rate of 360 plants a minute. The rows extend in two directions so that the fields can be cross-cultivated by machine, thus eliminating most of the hand work. We have used various spacings and have settled on 30 inches apart in each direction as the most advantageous, which gives 6,969 plants per acre. Although we have some fields that are irrigated, our plantings in California have been largely on unirrigated land. With the cheapening of water power and the continued development of water for irrigation we will naturally use much more irrigable land than in the past. Such land, of course, costs more to operate, but the returns are at least proportionally higher.

(To be concluded)

"Carbowax"—Mold Lubricants

"Carbowax" is the registered[1] trade mark for two water- and hydrocarbon-soluble solids, which dissolve in water to form clear transparent solutions of reduced surface tension. "Carbowax" 1500 is a soft odorless solid of the consistency of petrolatum; while type 4000 is a hard transparent solid of paraffin-like consistency. Solutions of these materials, in concentrations of 10 to 20%, are similar to glycerine in viscosity.

One use of "Carbowax" is as a mold lubricant, where a concentration of 1½ ounces per gallon of water is said to serve satisfactorily. Molds using this solution are claimed to remain clean and free from carbonization even after one week's operation, and at molding temperatures the "Carbowax" decomposes without an appreciable carbon residue. Experiments have indicated that "Carbowax" compounds may be successfully employed as plasticizers in unvulcanized rubber compositions for self-sealing tubes.

[1] By Carbide & Carbon Chemicals Corp.

German Patents Relating to Vinyl Polymers—I

Law Voge[1]

A SERIES of articles which INDIA RUBBER WORLD recently published[2] described chiefly the German patents of Class 39b, Group 4.01, which are those patents covering the butadiene and related compounds. A second important class of patents, Class 39b, Group 4.02, covering vinyl and related radical polymers, is here presented, the patents (about 250 in all) are arranged in chronological order of the date of application. The German Patent Office entitles this class: "rubber-like and plastic substances by polymerization of other organic compounds with olefinic double linkages, e.g., vinyl esters, vinyl ethers, vinyl alcohol, styrol, acrylic acid, methylene ketones, and their manipulation." This class does not include the preparation of the initial materials for such polymerization, such as vinyl chloride itself. This series, which will be complete in itself, includes several patents which were treated in the previous series.

The class now to be considered, unlike Class 39b, Group 4.01, where there was little question that the products for the most part possessed rubbery properties, contains many compositions that are clearly resinous in addition to the rubber-like inventions, and some inventions definitely state that both classes of product are derivable from the process. Distinguishing between a rubber and resins presents difficulties, and although W. J. S. Naunton devotes a chapter in his treatise on synthetic rubber[3] to the borderline between rubber and resins, his conclusions are indefinite and cannot be applied to patent literature where compositions rather than precise elastic properties are described. Another point to be considered in connection with the present series is that many of the products by themselves are not rubber-like, but may be converted into an extensible material by the addition of a plasticizer.

Inventions in connection with the current series of patents apparently started in November, 1911, when I. Ostromislensky submitted an article describing the structure and properties of polymerized vinyl bromide.[4] In this article he coined the term "caouprene" for polymerized vinyl. Five days before its publication Ostromislensky applied for the first German patent (1)[5] in this class, stating in his introduction that polymerized vinyl chloride or bromide is identical in all properties with the chloride or bromide of butadiene rubber. The action of sunlight completely consummates the polymerization of vinyl bromide or chloride; the reaction velocity is greatly increased by using ultra-violet rays and excluding air. Stirring the initial materials avoids decomposition. The polymerizate dissolves readily. It has now been found that treating solutions of vinyl chloride or bromide with zinc dust or that of certain other metals in the presence of alcohol produces the first members of a series homologous with that of natural rubber. Treatment of the polymerized vinyl halide with aromatic amines or caustic potash produces reactions quite analogous to those produced when butadiene rubber halides are similarly treated.

A patent (2) covering products of organic vinyl esters states that colorless, glass-clear, solid masses which may be substituted for celluloid, etc., are obtained by subjecting vinyl esters, such as vinyl acetate and vinyl monochloracetate, to direct sunlight or the rays of a lamp such as a mercury vapor lamp. Heat also may accomplish polymerization. The patent states that in 1878 Baumann showed that vinyl chloride and bromide could be polymerized by light to form solid products,[6] but these products are porous, powdery, and industrially useless. Consequently it was not anticipated that the polymerization of organic vinyl esters would yield products adaptable to the most varied industrial uses. These products, which are good insulators, may be shaped to any desired form by softening and then hardening, or by dissolving and then evaporating the solvent.

A patent (3) for preparing horn substitute, films, artificial fibers, lacquers, etc., states that the polyvinyl halides, usually porous and pulverous, may be transformed into an odorless, fireproof, commercially useful product by dissolving or softening the material—generally in hot chlorobenzene—and evaporating the solution.

A patent (4) described as a supplement to patent (2) states that in all applications of the base patent the reaction may be greatly accelerated by using catalysts such as peroxides, ozonides, organic acid anhydrides in combination with oxygen or oxygen-yielding agents such as perborates, or percarbonates as well as certain metallic oxides as silver oxide. In addition to accelerating the reaction, these catalysts alter the properties of the product.

A patent (5) for the polymerization of vinyl compounds cites as prior art patents Nos. 338,281 and 373,369, which cover the polymerization of vinyl compounds by heating under pressure in the presence of organic peroxides catalysts; these catalysts convert only a portion of the vinyl compound to the polymerizate notwithstanding the assertion in patent No. 373,369. It now has been found that the degree of transformation is considerably raised when the already known organic or inorganic peroxide catalysts are used in the presence of water; especially effective are hydrogen peroxide, benzoyl peroxide, or barium peroxide.

A process for the preparation of elastic material was covered in a patent (6) which states in the introduction that new elastic substances, appropriate for the manufacture of insulators, glassware, billiard balls, lenses, celluloid substitute, etc., are made by subjecting methylene ketones (prepared according to the process of German patent No. 222,551) such as methylene acetone and methylene methylethyl ketone, to polymerization by heat.

Citing Baumann's photochemical polymerization process for vinyl chloride and vinyl bromide which was utilized in French patent No. 442,981,[7] a patent (7) was applied for which stated: "A very pure solution of vinyl halide, however, with exclusion of high temperature, is only polymerized in the illumination from a quartz lamp—not in sunlight."

The inventors discover, however, that such polymeriza-

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[1] Research chemist and engineer, Washington, D. C.
[2] Apr. 1, 1940, pp. 48-50; May 1, 1940, pp. 47-49; July 1, 1940, pp. 45-46; Aug. 1, 1940, pp. 43-44; Sept. 1, 1940, pp. 41-44; Oct. 1, 1940, pp. 41-42, 48; Nov. 1, 1940, pp. 39-40, 46; Dec. 1, 1940, pp. 53-55; and July 1, 1941, pp. 39-42.
[3] "Synthetic Rubber", pp. 28-35. Macmillan & Co., Ltd., London, 1937.
[4] *Russ. Phys.-Chem. Ges., J.*, Feb. 15, 1912, pp. 204-39.
[5] For details on patents see end of this article.
[6] *Liebig's Ann. Chem.*, 163, 308 (1878).
[7] Applied for by Ostromislensky and the "Bogatyr" company, Mar. 21, 1912, and granted July 3, 1912.

tion occurs in daylight if appropriate catalysts, such as uranyl, cobalt, or vanadium salts, are used.

Several years passed before another application for patent (8) in this class was made in Germany. Ostromislensky, who had transferred his residence to New York, N. Y., applied for a patent on the process for the preparation of a vitreous mass from styrol or its derivatives. This is equivalent to United States patent No. 1,676,281, granted July 10, 1928, although the claims of the two patents vary somewhat. The American patent described a process by which substantially pure styrol is emulsified by aqueous ammonia and a soap-forming fatty acid, such as oleic, palmitic, or stearic acids, to produce after polymerization by heating a latex-like liquid which contains finely divided vitreous polymerized styrol suspended or dispersed in a non-solvent containing the reaction product of the ammonia and the fatty acid. The polymerized styrol may be precipitated by methyl alcohol, ethyl alcohol, acetone, sulphuric acid, acetic acid, or barium chloride solution, most of which are coagulating agents for latex. The dried and powdered polymerized styrol may be mixed with powdered pigments such as zinc oxide. The products are tough, transparent, practically colorless, and may be formed into thin films.

A process for the preparation of polymeric vinyl alcohol was covered in the next patent (9) in this class. Saponifying organic polymeric vinyl ester, the inventors obtained vinyl alcohol in polymerized water-soluble form. As an example, 80 grams of powdered polymerized vinyl acetate are introduced with stirring into a solution of 60 grams of potassium hydroxide in 500 grams of alcohol. The reaction is carried out at room temperature. The inventors refer to German patent (1) and the Baumann article of 1878.

Another patent (10) applied for by the same inventors on the same date covered a process for preparing derivatives of polymeric vinyl alcohol. It previously had been necessary to polymerize the corresponding non-polymerized derivatives of vinyl alcohol to obtain derivatives of polymeric vinyl alcohol. This was possible only to a limited degree as the unpolymerized vinyl alcohol derivatives are difficult or sometimes impossible to prepare. Now these polymerized derivatives are readily prepared from the polymerized vinyl alcohol of patent (9).

A patent (11), which supplements patent (5), claims development of the process protected by (5) covering the polymerization of vinyl acetate characterized in that peroxides of non-alkaline reaction are used as catalysts in the presence of alkalinely reacting substances which do not react with hydrogen peroxide solutions with the formation of peroxide hydrates. The second claim states that persalts, such as percarbonates, perborates, perphosphates, etc., can be used in place of the mixture of hydrogen peroxide and the alkalinely reacting substance; the persalts can be broken down to form alkalinely reacting substances.

The next patent in this class (12) covers basically different products by combining a vinyl ester with aliphatic aldehydes under pressure at high temperatures; for instance, vinyl acetate may be combined with formaldehyde, acetaldehyde and homologs, such as croton aldehyde. The patent claims a process for preparing spirit-soluble resins by heating organic vinyl esters to high temperatures with aliphatic aldehydes or with materials splitting off such aldehydes.

Preparing synthetic materials from styrol is covered in a patent (13) stating that the polymerization by light or by heat of styrol results in metastyrol of great brittleness or a material that can be filed or turned, depending upon the conditions of polymerization. The brittle material is the result of complete polymerization, and the workable material is formed when some unpolymerized substance remains; this unpolymerized material usually clouds the surface. By certain additions polymerized styrol is made workable by this invention. The patent claims a process for preparing synthetic materials by polymerizing styrol by light or heat or both in the presence of substances which boil at temperatures greater than 250° C., and which are difficultly volatile hydrocarbons, alcohols, ketones, esters, acid amides, or other materials used for plasticizing cellulose ether or ester.

The polymerization of vinyl esters by heating in the presence of catalysts yields much heat and proceeds violently; consequently a patent was granted (14) to avoid this disadvantage and permit use of the process on an industrial scale by dividing it after the beginning of the reaction into two phases carried out simultaneously—differing in the content in polymers and eventually in their degree of polymerization. Some precedent for this process is said to be found in Austrian patents Nos. 70,348 and 72,244.

The saponified products from polyvinyl esters, which are very readily soluble in water, lose this property on heating. This effect is accelerated by compounds having tanning properties (those which precipitate egg-albumin, such as tannin or formaldehyde). A patent has been granted (15) based upon this principle for the preparation of plastic substances insoluble in water and organic solvents by subjecting a polyvinyl alcohol to heating at 100° C. or above, or to the effect of tanning agents or a combination of both.

A process (16) for the preparation of rubbery or resinous substances from vinyl esters by heating with aldehydes was next patented. Saturated aldehydes amounting to 7 to 12% being heated with the vinyl esters, preferably at higher temperatures and with or without the addition of catalysts. This is equivalent to British patent No. 280,246 and French patent No. 643,438. The United States application apparently was not granted. The products are apparently used for chewing gums although not so stated in the German or British patents.

Patent References

(1) No. 264,123. Applied Feb. 10, 1912. Granted Sept. 8, 1913. I. Ostromislensky, assigned to the Gesellschaft fuer Fabrikation und Vertrieb von Gummiwaren "Bogatyr", Moscow, Russia.

(2) No. 281,687. Appl. July 4, 1913. Gr. Jan. 18, 1915. Assigned to Chemische Fabrik Griesheim-Elektron, Frankfurt, Germany.

(3) No. 281,877. Appl. July 4, 1913. Gr. Feb. 4, 1915. Assigned to Chemische Fabrik Griesheim-Elektron.

(4) No. 281,688. Appl. Apr. 2, 1914. Gr. Jan. 26, 1915. Assigned to Chemische Fabrik Griesheim-Elektron.

(5) No. 431,146. Appl. Aug. 14, 1914. Gr. June 29, 1926. E. Baum and W. O. Herrmann, assigned to the Consortium fuer Elektro-chemische Industrie, G.m.b.H., Munich, Germany.

(6) No. 309,224. Appl. Dec. 11, 1917. Gr. Apr. 17, 1920. Assigned to Farbenfabriken vorm. Fr. Bayer & Co., Leverkusen, Germany.

(7) No. 362,666. Appl. Oct. 21, 1920. Gr. Oct. 30, 1922. Assigned to Aktien Gesellschaft fuer Anilin-Fabrikation, Berlin-Treptow, Germany.

(8) No. 491,727. Appl. Aug. 29, 1924. Gr. Feb. 25, 1930. I. Ostromislensky, assigned to Naugatuck Chemical Division of United States Rubber Co., Inc., New York, N. Y.

(9) No. 450,286. Appl. July 20, 1924. Gr. Oct. 5, 1927. W. Hoehnel and W. O. Herrmann, assigned to Consortium fuer Elektro-chemische Industrie.

(10) No. 480,866. Appl. July 20, 1924. Gr. Aug. 15, 1929. W. Hoehnel and W. O. Herrmann, assigned to Consortium fuer Elektro-chemische Industrie.

(11) No. 490,040. Appl. Nov. 8, 1924. Gr. Jan. 23, 1930. E. Baum and W. O. Herrmann, assigned to Consortium fuer Elektro-chemische Industrie.

(12) No. 449,115. Appl. May 5, 1925. Gr. Sept. 3, 1927. Leopold and Michael, assigned to I. G. Farbenindustrie, A.G. Frankfurt a.M., Germany.

(13) No. 487,707. Appl. Oct. 22, 1925. Gr. Dec. 13, 1929. E. Laage, assigned to I. G. Farbenindustrie.

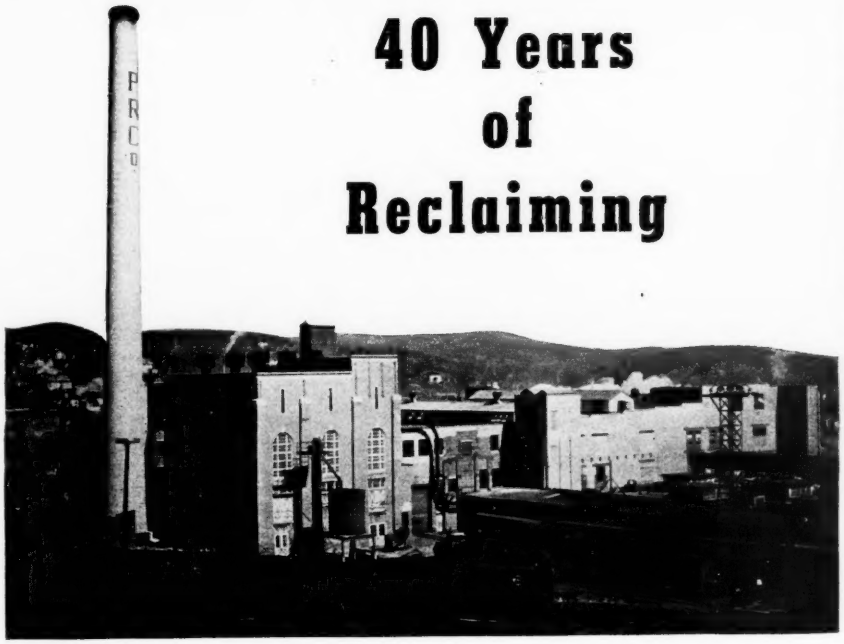
(14) No. 490,041. Appl. Nov. 15, 1925. Gr. Jan. 23, 1930. W. Hoehnel and W. O. Herrmann, assigned to the Consortium fuer Elektro-chemische Industrie.

(15) No. 526,497. Appl. Oct. 29, 1926. Gr. Sept. 25, 1933. A. Voss, assigned to I. G. Farbenindustrie.

(16) No. 563,792. U. S. Appl. Nov. 8, 1926. German Appl. Oct. 29, 1927. Gr. Nov. 9, 1932. Assigned to Canadian Electro Products Co., Ltd., Montreal, Canada.

(To be continued)

40 Years of Reclaiming



Blank & Stoller

Joseph F. McLean
Founder and Still President

The Present Plant of the Pequanoc Rubber Co.

ALONG the Pequanoc River in Butler, N. J., a 220-foot smoke stack of cream colored tile towers above one of the world's largest rubber reclaiming plants, the Pequanoc Rubber Co., where over 400 men are working day and night to help meet the rubber needs of the defense program. This modern plant, which has 360,000 square feet of floor space, is a far cry from the original plant of 40 years ago when 200 horsepower was utilized to produce two tons of reclaim daily. In one respect, however, Pequanoc hasn't changed in the past four decades; it still has the same president, "Joe" McLean, as he is known to his many friends.

Today's plant uses close to 3,000,000 kilowatt-hours of electricity monthly for about 200 motors which drive over 100 rubber mills and other machinery, and it has what is reported to be the largest cracker in the industry, which shreds 7,000,000 pounds of scrap rubber per month. For cooling the mills and washing the rubber, 1,800 gallons of water per minute are necessary. Steam, requisite for 25 devulcanizers (six by 25 feet), extensive drying apparatus, and the mill heating system, is supplied by a daily rate of 1,457,000 pounds from a boiler plant, containing four boilers of 2,400 horsepower, which was built in 1936.

Close to the Atlantic Seaboard so that trucks, trains, or ships are conveniently able to transport its products to any desired point, the Pequanoc plant is located 12 miles north of Paterson, N. J., and 25 miles west of New York, N. Y. The output of the plant is shipped to all parts of the United States, Cuba, South America, and, before World War II, to many European countries.

The Indian name, "Pequanoc", taken from the river of that name, led to the adoption of the familiar Indian head trade mark. Over 50 standard grades of reclaimed rubber are produced including such well-known grades as Ajax, Aurora, Champion, Comet, Imperial, Peerless, Red Star, Rex, Ruby, and Sterling. Pequanoc has specialized in reclaim for insulated wire and cable manufactures; while other large quantities of Pequanoc reclaim go into proofing, footwear, hard rubber, jar rings, hose, and mechanicals.

Now entering its fifth decade, the Pequanoc Rubber Co. was incorporated on June 8, 1901, with a capital of $60,000 by Joseph F. McLean, president; Charles J. Trent, secretary and superintendent; and Paul F. Witteck. Mr. McLean had previously been connected with the Butler Hard Rubber Co. and later as a partner with the Chapman-McLean Rubber Co., rubber dress shield manufacturer. In addition to his activities with Pequanoc, Mr. McLean has found time through the years to devote to his civic duties, having served as mayor of Butler and treasurer of Morris County.

The original incorporators announced that they intended to submit samples of their new product to the trade in October, 1901. By November, 1902, the capital stock had been increased from $60,000 to $120,000, and it became necessary to enlarge the plant, for the employes were working 24 hours a day to keep pace with the orders; this capacity was the result of a reputation for high-grade reclaim made then by a purely mechanical process. In July, 1918, capitalization of the company, which then had a daily capacity of 50 tons, was increased from $250,000 to $750,000. At the time of its twentieth anniversary in 1921, the Pequanoc plant occupied more than five acres of floor space, and it consumed 3,000 horsepower in the production of reclaimed rubber.

Besides Mr. McLean, present officers of the company are C. J. Howell and F. E. Traflet, vice presidents; and Miss M. T. Gunter, secretary-treasurer.

The Original Pequanoc Factory

Moh-Nat[1]—A Sponge Rubber Base Carpet

CARPET that is made without weaving issues at the rate of ten feet a minute from a 220-foot long continuous unit which includes a rubber vulcanizer as one of its essential components in the plant of Mohawk Carpet Mills, Inc., in Amsterdam, N. Y.

Materials

The three materials which are vital to the production of Moh-Nat, the trade name of this floor covering, and which must be prepared before entering the long carpet production machine are: the burlap base treated with rubber, the fibers, and the adhesive which binds the fibers to the base.

The uncured rubber compound, which is converted to sponge rubber during vulcanization, is processed on standard rubber machinery and calendered on to the burlap. Almost any strong open-mesh material may be used as a base for this uncured rubber, but burlap is most economical and consequently most often used. After calendering, the rubber-treated burlap is rolled up and sent to the processing room ready to be started in the carpet production machine.

Almost any type of fiber may be used, but most of the material now employed—the "flock"—is a blend of wool or animal hairs. The length of the fibers determines the depth of the pile on the finished carpet so that the flock must first be carefully cleaned and carded and then classified as to size. This fiber processing is done in a group of machines, synchronized to make the operation one continuous process up to the point where the flock is piped directly into the carpet machine.

The adhesive which binds the flock to the burlap is a cement of plasticized rubber and a solvent, developed specifically for this process. While the carpet making process is in operation, the cement is fed into the unit automatically.

Production

The carpet production unit, actually a series of correlated machines and mechanisms, is capable of running at speeds of from two to 22 feet per minute. The production unit consists essentially of a device which spreads the adhesive, a machine which applies the flock, the vulcanizing ovens, and cooling chambers. The curing ovens are compact, insulated boxes more than 125 feet long and 86 inches wide, and air currents are circulated through them by controlled fans. The temperature and the time of cure are determined by the speed used and the degree of cure desired. Three men work at the starting point of the production machine, the chief operator and two assistants. One of the latter is in charge of the feeder that pipes in the adhesive; while the other oversees the passage of the wool or hair.

The process begins with the lowering of a roll of rubber-covered burlap on to the machine by a trolley. On a special carriage the roll, with the rubber side down and the uncoated burlap side up, may unroll freely. After passing over a roller the rubber-treated burlap goes under a doctor blade which spreads the adhesive to a predetermined thickness.

The wet adhesive-coated burlap enters the fiber-applying machine where the flock is fed by air and sifted down upon the burlap from two different types of sifters. Here the material is carried for a distance of twelve feet in a vibrating conveyer, the action of which makes the fibers stand on end. Before the material emerges from the unit all the fibers which are not adhered to the adhesive are removed from the fabric by a powerful suction machine.

The material leaving the flock-applying machine has the superficial appearance of carpet, but the adhesive is still wet and uncured, and the rubber compound on the back of the burlap has not yet been transformed into sponge rubber. After traveling up an inclined conveyer, the material enters the curing ovens on a woven wire conveyer belt. In these ovens the adhesive is dried and cured; the fibers are vulcanized into the adhesive as it hardens. Simultaneously the rubber is vulcanized and converted into sponge, expanding from 0.045-inch to nearly one quarter of an inch in thickness. During this operation no pressure is applied to the material, but the variation of thickness of sponge is negligible.

The fabric is fully cured, the fibers are anchored, and the sponge cured as the material leaves the ovens and enters a cooling chamber where the hot fabric is quickly cooled to normal temperature. A series of brushes removes any lint which may not have been previously removed by suction. A special oil, resembling the natural oils of the fibers and intended to replace any which may have been lost in the ovens, is sprayed on the fibers. None of this oil, however, remains on the surface of the carpet.

Two men, one on each side of a long inspection table, examine the carpet as it passes between them. They may stop the passage of the material for closer examination by pressing a button, but this action does not halt the entire process; a special take-up device handles the material until the inspection table operates once more. The fabric passes over and around a series of tension rolls after it leaves the inspection table, and over cutters which trim it to the desired width and remove the excess burlap. A straight edge is given to the carpet by this operation so that it may be laid and joined at the seams if desired.

After trimming, the processing is completed by rolling the finished carpet into the proper lengths. These rolls, when tagged, are ready for shipment.

[1] Registered United States Patent Office trade mark.

Faulty Breaks in Tensile Testing[1]

In testing the tensile strength of soft rubber stocks, inaccurate results are often obtained due to tearing in the grips when the standard ¼-inch dumbbell, A. S. T. M. die C,[2] is used in the usual manner. To remedy this, this laboratory has used a ⅛-inch dumbbell as specified in the recent federal specification.[3] However it is highly desirable to use the standard ¼-inch dumbbell on all tests to obtain comparable results. The writer has found that tearing in the grips may be eliminated by the insertion of a piece of soft rubber about one inch square by 0.080-inch thick between the tab end of the dumbbell and the movable part of the grip. The soft rubber insertion protects the tab end from the tearing action of the grip.

[1] From Arthur E. Barrett, assistant rubber technologist, Rubber Laboratory, Navy Yard, Mare Island, Calif.
[2] A. S. T. M. Standards on Rubber Products: December, 1940, D412-407.
[3] Federal Specification for Rubber Goods: General Specification, ZZ-R-601a, June 24, 1940.

Black Light Versus the Blackout[1]

Samuel G. Hibben[2]

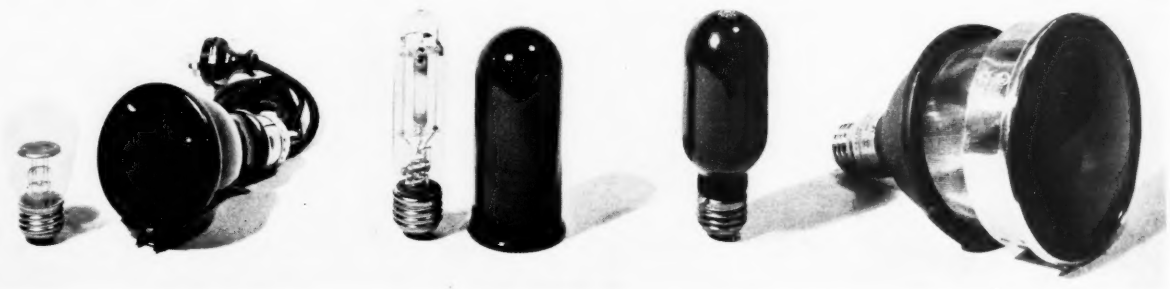
A NEW type of illumination popularly termed "black light" may perform "white magic" for industrial plants and employes under circumstances such as for military protection when all ordinary lighting systems must be turned off or when, even in peaceful times, there may accidentally be a temporary failure of electric power.

Principles of Illumination

As the name implies, black light is invisible to the eye. Even the lamp bulbs producing it are practically invisible —are, at least, not bright sources and seem to be but dimly glowing. If the illuminated objects are treated with special paints, these and only these will shine brightly. Moreover some pigments or colors will continue to shine in the dark for several minutes after the lights go out. In this fashion the things we want to see become self-luminous.

one octave of wave length of radiation, and normally we can use only the kinds of light that compose the "rainbow spectrum" or which lie between the two extremes of deep red and deep violet. However the black light, which has a wave length shorter than the lower limits of eye sensitivity, and for that reason cannot be seen or used alone, is nevertheless a very useful tool since it does develop the visibility of all objects whenever these may be treated with fluorescent paints or whenever these are made of any of the many substances that are fluorescent.

The principle is simple. Black light together with normal visible light is produced by special tungsten filament lamps or high-intensity mercury vapor lamps. The visible light, however, is screened out and absorbed by special deep purple glass filters or bulbs, with the result that the



Black Light Equipment

Left to Right: 2½-Watt Argon Glow Lamp with Reflector and U. V. Filter; 100-Watt AH-4 Mazda H Lamp and Heat-Resisting Red-Purple U.V. Filter; 100-Watt BH-4 Mazda H Lamp in Red-Purple (U.V. Filter) Bulb, (No Other Filter Needed); 100-Watt EH-4 Mazda H Projector-Type Lamp, and Clip-on Red-Purple U.V. Filter for It.

Numerous materials will produce fluorescent and phosphorescent effects when exposed to ultra-violet radiations. Such materials include minerals, as fluorite and willemite; dyes such as anthracene and rhodamine; chemicals such as zinc sulphide and certain other sulphides, oxides, sulphates, phosphates, and silicates; animal and vegetable matter; foods; glassware; plastics; paints and pigments. A large number of commercial dyes and paints are now available which glow with brilliant colors when excited by black light.

This strange radiation that excites this luminescence is really a species of long-wave ultra-violet light which, when falling on the majority of normal and untreated objects, is no more effective in disclosing their presence than if this radiation were just plain heat.

The sensitivity of the human eye is limited to about

remaining radiation is practically invisible. Nevertheless this black light can be projected or reflected just as though it were visible, and if directed toward fluorescent surfaces or objects, it causes these to shine with a softly glowing color and a perfectly good visibility.

Industrial Applications

Within the industrial building at the time of a sudden voluntary blackout, there may exist the need of moving employes through aisles, down stairways, or to exits and points of shelter, or to make visible any dangerous objects that in the dark would constitute hazards. One plan, therefore, is to paint the passageways, either floor or wall, and the stairways such as a section of the treads or the hand rails, with fluorescent paint and to have the black light lamps connected on an emergency lighting circuit. The use of fluorescent coatings may extend to directional signs and arrows such as marking the entrance to air raid shelters and may delineate handles of tools or machinery, door knobs, fire extinguishers, or first-aid cabinets, etc. To the outside observer that building would be unlighted—invisible perhaps. Yet certain softly glowing objects within could insure reasonable safety.

Extending this fluorescent treatment outside of the factory buildings, it is conceivable that through the use

[1] In reply to a question as to the feasibility of mixing some of the fluorescent materials into a rubber compound to be used as a reflector of black light, the following comment was received from the Westinghouse Electric & Mfg. Co.: "Our lamp division research engineers say that it is theoretically possible to include some of the fluorescent materials in rubber. Actually, however, the advisability of such a mixture is doubtful because a large amount of the compound would need to be used. Only a small portion of the fluorescent material would show on the surface, and its reflective qualities would be weak. They seem to think it would be simpler to paint the rubber with fluorescent materials if there were any reason for using rubber in the first place. At least two organic compounds—some zinc sulphides (bluish) and cadmium sulphides (orange)—can be mixed with rubber satisfactorily. These compounds are fluorescent and are related to the sulphur family; so they should not be affected by vulcanizing. For the same reason they should not affect the rubber itself. Ordinary fluorescent compounds mentioned in Hibben article are not particularly stable at high temperature and would probably disintegrate at vulcanizing temperature." EDITOR'S NOTE.

[2] Director of applied lighting, Lamp Division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

of fluorescent materials such as special plastics or luminescent enameled signs, there may be better control of nighttime traffic along driveways or through important gates. It has been suggested even that fire plugs and similar objects be treated with luminescent paints and that black light projectors be mounted at strategic points aimed to flood these areas with black light, but never to any high degree of visibility that would disclose their presence to an enemy aircraft or to some distant observer.

A second phase of the protective study contemplates the use of self-luminous or phosphorescent pigments which, although quite expensive, may yet be justified for certain key objects. These materials may be excited or "charged" by any normal artificial lighting system or by daylight, but will be luminous and visible when the exciting radiation has been cut off. These phosphorescent materials will glow usually for several minutes and with sufficient brightness to disclose objects or signs for the time necessary to insure safety, or long enough to make provisions for other illuminations. Phosphorescent dyes have been incorporated into fabrics and articles of clothing as well as the dials of instruments, maps, and local signs.

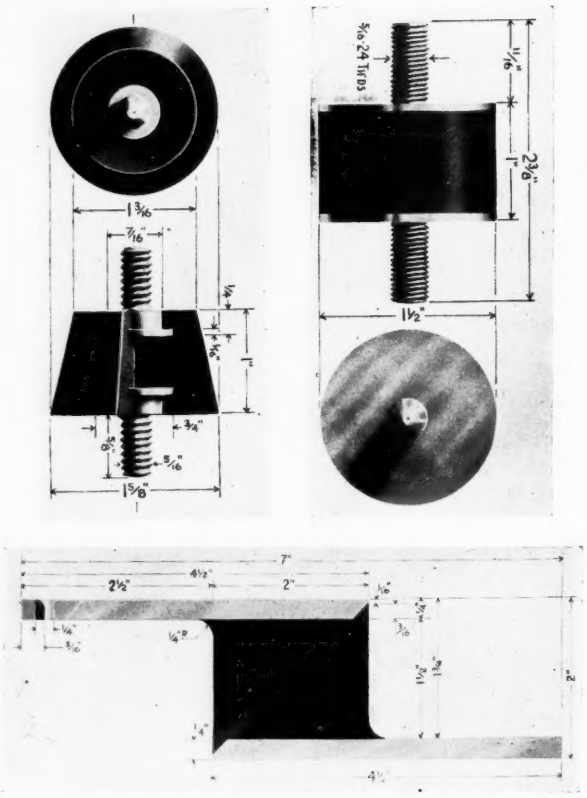
Experiences in Western Europe have indicated the practicability of mounting black light projectors in doorways or to shine on a traffic policeman at a street intersection or even in a miniature form to be carried around in one's overcoat pocket. In addition to the air raid shelter signs or subway entrances and cellars, there are examples of luminescent gloves, hatbands, and shoes to disclose pedestrians. Experiments are under way using special black light projectors mounted on vehicles, permitting their nighttime movement along dark roadways where fluorescent paints have been applied to sign posts, curbs, and railings.

Black Light Equipment

A typical industrial black light projector consists essentially of a 100-watt type CH-4 or EH-4 high-intensity mercury vapor lamp in a bulb approximately five inches in diameter and with a black glass filter clipped to its end. Connected to the lamp socket must be a small current controlling transformer—a necessary evil in the case of any efficient mercury vapor lamp. These outfits are not essentially inexpensive as yet, but on occasion the results may justify the investment just as in the case of a high-priced fire extinguisher, even though it be quite seldom employed. In some simpler forms the mercury lamp may be replaced by a special tungsten filament lamp in a black glass bulb with a life on the order of 200 hours, but which requires no transformer and, differing from the mercury lamps, can be burned on direct as well as alternating current. Also, where only a small amount of ultra-violet is needed, the small ¼-watt or 2½-watt Argon glow lamp may be used direct from the lighting circuit. As the latter's output of visible light is very low, it may be used with or without a filter, but, in general, the filter will improve the results obtained.

All of these available devices may soon expand into more suitable and less expensive assemblies as the practice of applying black light becomes better known and more widely used. True, the methods are novel, and most of the jobs have been strictly of the pioneering type, but just as fluorescent carpets are growing to be popular in the aisles of theaters or just as fluorescent plastics are becoming of interest in connection with interior ornaments, so it is predicted that industrial uses of black light and fluorescent objects wll become part of the safety preparations of the modern industrial establishment.

Three New Vibro-Insulators



Goodrich Vibro-Insulators
Upper Left: Type 33; Upper Right: Type 36; Lower: Type 14

THREE new Vibro-Insulators, including shear and compression types, lessen vibration and noise in many kinds of machinery, according to their manufacturer, The B. F. Goodrich Co., Akron, O.

Type 14 is recommended for a load in vertical shear of 80 pounds per square inch. With this loading there is a shear deflection of one inch, and the minimum disturbing frequency at this deflection is 470 per minute. This type is also applicable with the rubber in compression; in this case the metals are placed in a horizontal position. The maximum recommended load under compression is 250 pounds per square inch, with a deflection of 5/16-inch at that loading and a minimum disturbing frequency of 850 per minute at that deflection.

In Type 33 the rubber is applied only in compression. The maximum recommended loading is 150 pounds with a deflection of 5/32-inch; while the minimum disturbing frequency is 1,200 per minute at that deflection.

Type 36 is used more advantageously with the rubber in compression although the load may also be applied in shear. Deflection beyond 20% of the rubber thickness (0.175-inch) is not recommended with 35 and 50 durometer hardness rubber. With this deflection the minimum disturbing frequency is 1,250 per minute, and the load necessary to deflect a 35 durometer mounting is 100 pounds, and for a 50 durometer mounting it is 85 pounds. Lower loads than these limits, which are understood to be maxima, are recommended, especially where disturbing frequencies are greater than 1,250.

The Impregnation of Cotton Yarns with Latex[1]

G. van Nederveen

EVER since rubber has been appearing on the market not only in the form of crepe or sheet, but also in the form of latex with a rubber content of 40% or more, numerous methods have been suggested for the direct impregnation of textile fibers with latex. The advantages connected with the substitution of latex for rubber solution have already been reported.[2]

Impregnation is here understood to be the penetration of rubber between the individual fibers of yarn and not the penetration in the fiber itself. Stevens and Stevens,[3] in refuting British patent No. 178,811 taken out by Hopkinson,[4] have conclusively shown that this is not possible since the latex particles are larger than the pores of the fibers. In the case of ideal impregnation of yarn, therefore, each fiber would have a thin coating of rubber on its surface.

In the first section of the present article various impregnation methods are mentioned. According to one process good impregnation of yarn and cord can be obtained by using wetting agents like Igepon T, and the aim of the present investigation was to obtain a closer knowledge of impregnation when using wetting agents. It is clear that in these impregnation tests and also in impregnations on a commercial scale determination of the amount of penetration is of special importance. This can be accomplished directly by microscopic examination of the cross-sections of the impregnated yarn. Before the actual impregnation tests could be started it was therefore necessary first to develop a good method of preparing these cross-sections, since no satisfactory method is known to have been described in literature.

In addition to this visual determination of the degree of impregnation, other means were tried in evaluating the effect of the impregnation method employed. To this end the weight of the rubber absorbed by the cord was determined after each impregnation. As the results show, this method does not give a clear picture of the amount of impregnation obtained, since a considerable, though not constant, portion of the rubber is deposited on the outside of the yarn. One of the mechanical properties of cord which is favorably influenced by impregnation with rubber is fatigue resistance, consequently the treated cords were subjected to fatigue tests.

In this connection it developed that by impregnating in conjunction with a wetting agent according to the method indicated in the third section below considerable improvement in fatigue resistance was obtainable.

Methods for Impregnating Yarns with Latex

When yarns and fabrics are impregnated with latex, it is found that, unlike solution impregnation, the rubber is not anchored to the yarn in a satisfactory manner because the rubber from the latex does not sufficiently penetrate the interstices between the fibers. To achieve the proper penetration in a simple manner is not easy, as is evident from the widely different methods already proposed.[4] Some typical methods are mentioned below.

Preliminary Treatment of the Cotton

Schilthuis[5] ascribed the poor impregnation obtained with latex to the low capillarity of the cotton surface. He improved this capillarity by treating the cotton with a alkali and soap solution under pressure of 125° C. After this treatment the material was dipped into latex, and the surplus latex removed. The degree of penetration was calculated from the change in the specific gravity of the yarn, which was determined by means of a pycnometer. The improved penetration of the rubber was observed with the aid of a microscope and confirmed by fatigue tests.

Latex Treatment before Twisting

The principle of treating the fibers with latex before they are twisted into yarn was worked out by Lejeune and Bongrand[6] and by Pirelli,[7] among others. According to this process, latex is sprayed on to the fleece of fibers before the fiber is spun on the spinning machine, and is then twisted into yarn in the usual way. By this means all the fibers in the yarn are coated with rubber.

Forcing Latex into the Yarn

In the Brandwood[8] method the yarn is wound on a hollow, perforated cylinder so that it does not overlap. The latex is forced through the walls of the cylinder into the yarn and then forced back in the opposite direction under a pressure of a few atmospheres at most. To insure thorough wetting, the fibers are first boiled in a solution of a sulphonated fatty alcohol. Duarry-Serra[9] even uses a pressure of several hundred atmospheres in forcing the latex into the fibers.

Spooling the Yarn in Latex

Ritzert[10] bends and stretches the yarn a few times while it is passing through latex. In this operation the yarn is opened somewhat to permit penetration of the latex. A similar method is also used by Lejeune,[11] who winds the yarn several times from one spool on to another after treatment with latex.

Adjustment of the pH

Bongrand[12] changes the pH of Revertex[13] from 11.4 to 5.2 by the addition of acetic acid and a stabilizer. When this mixture, which is more viscous than the original Revertex, is brought into contact with fibers having an alkaline reaction, the latex becomes less viscous and penetrates the fibers.

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[1] Communication No. 21 of the Rubber Foundation, Delft, Holland, translated from the Dutch by L. Thakar.
[2] A. van Rossem, *Chem. Weekblad*, 20, 124 (1923).
[3] *Trans. Inst. Rubber Ind.*, 11, 67 (1935).
[4] See also J. E. Ch. Bongrand, "Receuil des Communications du Congres international de Caoutchouc", Paris, France, 1937, p. 11.
[5] Communication No. 14 of the National Fiber Bureau, Delft, 1925. See also British patent No. 228,893 in the name of J. J. Schilthuis.
[6] British patent No. 338,381. These threads are marketed under the name of Filastic.
[7] Societa Italiana Pirelli, British patent No. 408,213.
[8] British patent No. 408,931.
[9] British patent No. 391,031.
[10] United States patent No. 2,040,105.
[11] British patent No. 405,313.
[12] Netherlands patent No. 40,015. See also British patent No. 405,311.
[13] This latex with about 73% dry material content is concentrated by evaporation and stabilized with alkali and soap.

Impregnation with Wetting Agents

Hauser and Hühnemörder[14] improved the penetration of latex rubber between the fibers of a yarn by employing wetting agents. They determined the reduction in surface tension of latex in the case of a large number of wetting agents and determined their effect on impregnation with latex by microscopic observation of cross-sections prepared according to a method which they described.[15] According to Cotton,[16] wetting agents are used in industry for impregnating jute; in this case the fabric is first soaked in a ½% Igepon T solution and, when partly dry, is dipped into the latex. Hauser and Hühnemörder also observed that when Igepon T is used, it is advisable to treat the yarn with the wetting agent first and then with the latex, by which better results are obtained than by impregnation with a mixture of latex and wetting agent.

Since the above literature references on impregnation with the aid of wetting agents give no further information about the method employed and the conditions which affect the degree of penetration, the investigation described below was instituted to obtain a more exact knowledge of this method of impregnation.

Preparation of Yarn for Microscopic Examination

It is practically impossible to cut thin sections for microscopic examination from soft vulcanized or unvulcanized rubber without special aids, and various methods have already been proposed to render the rubber suitable for this purpose. These methods can all be included under one of the following three processes:

1. Continued vulcanization of the rubber to a hardness approximately equal to that of ebonite by cold vulcanization[17] with sulphur chloride, or by hot vulcanization.[18] In the first instance, the degree of hardness of the rubber progressively decreases from the surface to the center and thus is not equally hard throughout; furthermore the sulphur chloride attacks the cellulose fibers so that they cannot be cut. In the second case, the flow of the rubber may cause undesirable displacement of the rubber in the yarn.[19]

2. Freezing the rubber and cutting by means of microtome.[20] The microtome required for this purpose is not available in every laboratory, and preparation of the sections is no simple matter by this method.

3. Embedding in a material[21] which rapidly becomes softer at a temperature of a few degrees above 0° C.

In many cases sections obtained by one of these methods are given a final treatment with strong H_2SO_4 in order to burn the fibers away.[18, 19, 22] By this means, however, the finer details are often considerably distorted.

In the investigation of the impregnation of cord with latex, later to be described, it was found necessary for microscopic control of the degree of penetration between the fibers of the thread to specify the following requirements: (a) rubber and fibers must remain intact and must not change their positions with relation to each other after the impregnation process; (b) fiber and rubber are to be plainly distinguishable from each other; (c) it should be possible to carry out the process in a fairly simple manner.

These requirements are satisfied by a method employing celluloid as the embedding material, which is described below and was adapted from the method which Kronacher and Lodemann[23] used for making samples for the microscopic study of wool fibers. Good results were obtained with this method in the laboratory for Technical Botany of the Technological Institute of Delft.[24] Kronacher and Lodemann describe the method as follows:

One end of unraveled wool fibers is adhered to a piece of paper by means of a drop of sealing wax. After the wax has hardened, the hairs are combed parallel to each other; then the free end is attached to the paper with wax. Next the paper is mounted on to a level board and held in place by thumb tacks so as to prevent it from curling up during subsequent treatment. Over the prepared bundle of fibers is poured a layer (two millimeters thick) of a solution of 35 grams of celluloid in 170 grams of acetone to which four grams of Merck's Oil Black O may be added if desired. Care should be taken that the acetone does not come in contact with the sealing wax at the ends of the fibers as this would soften the wax so that the fibers would not remain stretched. After about eight hours the acetone has evaporated sufficiently to allow the celluloid to become hard enough for cutting. If kept longer than 24 hours, the celluloid becomes too hard, but can be softened again by keeping the preparation for some time in a desiccator over acetone.

After drying, a strip of the paper to which the celluloid-coated fibers have been adhered is cut out, clamped on to a microtome or ordinary cutting cork, and then thin sections are cut by means of a microtome or an ordinary razor. According to Kronacher and Lodemann, it is possible in this way to make sections as thin as 10 microns from thick horse hairs (diameter about 50 microns). Microscopic examination of the internal structure of the transparent fibers can be further aided by using dark-colored celluloid for embedding.

After the procedure for coloring the preparation was modified, the Kronacher-Lodemann method proved to be very well suited for cutting thin sections of rubber-impregnated yarn. It is undesirable to examine microscopically rubber-treated yarn when it is embedded in a dark material, since the rubber with its low degree of transparency would be hard to distinguish in the dark preparation.

This objection can be met by the following procedure. The impregnated yarn is attached to a piece of paper with the aid of sealing wax or concentrated Venetian turpentine applied at the ends, and this paper is pinned on to a small board. A solution of 35 grams of celluloid in 170 grams of acetone to which eight grams of tricresyl phosphate have been added is poured over about two-thirds of the length of the yarn so that contact of liquid with the ends of the yarn is avoided. The board with the embedded material is then placed into a thermostatically controlled cabinet for some hours at room temperature, followed by a short period at 30 to 35° C. to evaporate the acetone. When the celluloid has become hard enough, the cord is cut out in a strip about four millimeters wide, and thin sections are cut from this by a cutting cork and an ordinary razor. These sections are colored on an object glass for two minutes with a saturated solution of Sudan III in a mixture of three parts alcohol, one part water, and one part glycerine. The surplus color is washed away with a mixture of equal parts

[14] *Trans. Inst. Rubber Ind.*, 8, 316 (1932-33).
[15] *Mettalges. Mitteilungen aus dem Arbeitsbereich*, 5, 13 (1930). See also W. J. R. Hauser, *Rubber Age* (N. Y.), 32, 242 (1933).
[16] *India Rubber J.*, 86, 598 (1933).
[17] H. Green, *Ind. Eng. Chem.*, 13, 1130 (1921); E. A. Grenquist, *Ibid.*, 20, 1073 (1928).
[18] E. O. Dieterich, *Ind. Eng. Chem.* (Anal. Ed.), 2, 102 (1930).
[19] E. A. Hauser and M. Hühnemörder, *Caoutchouc & gutta percha*, 25, 14146 (1928).
[20] Depew and Ruby, *Ind. Eng. Chem.*, 12, 1156 (1920); T. F. Steele, *Ind. Eng. Chem.* (Anal. Ed.), 2, 421 (1930); E. A. Hauser and M. Hühnemörder, *Metallges. Mitteilungen aus dem Arbeitsbereich*, 5, 13 (1930).
[21] H. P. Stevens, *Bull. Rubber Growers' Assoc.*, 15, 653 (1933).
[22] H. Green, *Ind. Eng. Chem.*, 13, 1130 (1921).
[23] "Abderhalden's Handbuch der biologischen Arbeitsmethoden", Sec. 7, Part 2, No. 1, p. 316.
[24] The author once more wishes to thank G. van Iterson, Jr., and A. C. de Leeuw-Sloep for their important information in this part of the investigation.

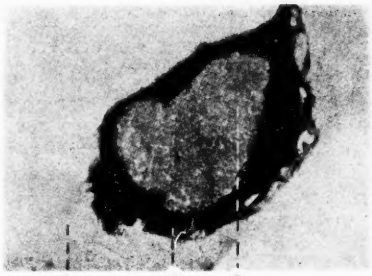


Fig. 1. Bicycle Tire Cord Treated with Latex only (Magnified 75 Times)

A. Celluloid; B. Rubber; C. Cotton Fibers

of water and glycerine. When the sections thus obtained are viewed under the microscope in water or in a water-glycerine mixture, the lemon yellow rubber, pale pink celluloid, and uncolored fibers can be plainly distinguished.

Figures 1 and 2 show microscopic views obtained as above. The first represents an impregnated bicycle tire cord, in which the rubber has been deposited on the outside of the cord, but has not penetrated between the fibers. In the second figure the rubber has penetrated the cord and is plainly visible between the transparent fibers.

Influence of Wetting Agents on Impregnation

The preparatory tests described below were made on bicycle tire cords, the composition of which follows:

Material	Unbleached Cotton
Length of staple of fibers	22 millimeters
Number of twists in single yarn	16.7 per inch
Number of single strands of yarn	4
Number of twists in the twined cord	8.9 per inch
Contraction upon twining	4.9%
Count of the single yarn	20 meters per gram
English metric number	12

A commercial, ammoniated 40% latex was employed which was diluted for these tests to a rubber content of 20%. Of the numerous wetting agents mentioned in literature, Igepon T,[25] Sulphonated Lorol,[26] and Igepon AP[25] were selected.

A simple apparatus was constructed to permit impregnations to be carried out under conditions that would always be the same and that could be varied as desired. The apparatus (Figure 3) consists of a bath through which the cord is passed and two small doctor blades as well as a reel, driven by a small synchronous motor, for winding up the impregnated cord. The bath and the blades are located on a table which can be moved parallel to the reel by means of a rope and tensioning weight. During impregnation the table automatically moves past the reel, causing the cord to spiral about the reel. During the experiments the cord was generally passed through the latex at the rate of 400 centimeters per minute so that it was immersed for two seconds. Where this rate of travel was changed, this is pointed out. After drying in air, the cord is removed, thoroughly dried at above room temperature, and the amount of rubber taken up determined by weighing. The figures given are averages for five pieces of impregnated cord each about six meters long.

Certain factors, the influence of which on impregnation was not known, were investigated before proceeding, and it was found that: (1) The amount of rubber taken up increases with the concentration of the latex, the fineness of the cord used, and the temperature at which impregnation is carried out. (2) An ammonia concentration of between three and 15 grams per liter of latex does not affect impregnation. (3) Air-dried cord containing 10% moisture takes up about 20% more rubber than absolutely dry cord.

From the above it therefore appears that in such tests temperature, concentration of the latex, and moisture content of the yarns must always be kept constant, while the NH_3 content of the latex may vary within the limits indicated.

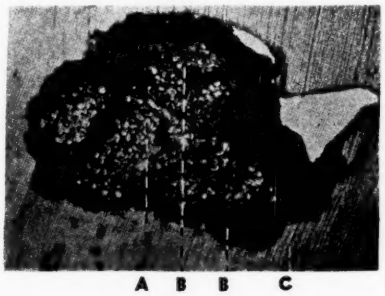


Fig. 2. Bicycle Tire Cord Impregnated with Latex after Preliminary Treatment with a Wetting Agent (Magnified 75 Times)

A. Cotton Fibers; B. Rubber; C. Celluloid

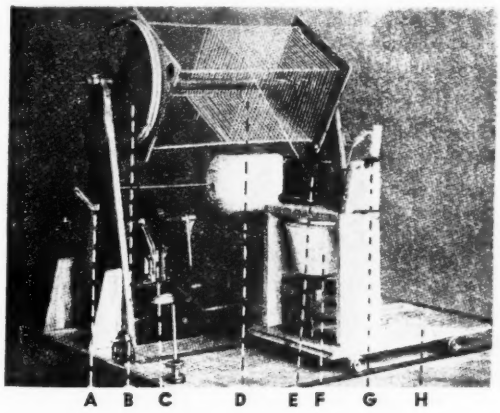


Fig. 3. Device for Impregnation Tests

A. Suspended Tensioning Weight for Moving Platform; B. Reel; C. Driving Motor; D. Impregnated Cord; E. Small Doctor Blades; F. Impregnating Tank; G. Spool with Cord; H. Traveling Platform

Igepon T

A very loosely twisted single yarn was passed through the latex bath to maintain contact with the latex for two seconds. After drying, the yarn was found to have taken up 80% of its weight in rubber, but the microscope showed no rubber between the fibers. If under the same conditions the thread was first passed through a solution of 2% Igepon T in water, then dried, and drawn through the same latex bath, the thread took up 150% of its weight of rubber, and the microscope showed that the

[25] Manufactured by I. G. Farbenindustrie A.G., Frankfurt a.M. (Netherlands representative, N. V. Defa, Arnhem).
[26] Manufactured by Imperial Chemical Industries, Ltd., London, England.

rubber had penetrated between the fibers completely. Figures 1 and 2 illustrate penetration in the case of a cord.

Next, the single yarn was replaced by the previously mentioned cord. When this was passed through the latex without the use of a wetting agent, it took up 40% of the fiber weight in rubber, all of which was on the outside, since the microscope nowhere disclosed rubber between the fibers. This picture is reproduced in Figure 1.

When a solution of Igepon T was added to the latex then, as Table 1 and Figure 4 show, the amount of rubber taken up by the cord slowly increased as the Igepon T concentration was increased, until with a concentration of 10 grams of Igepon T per 100 grams of rubber, the cord took up about 54% of the fiber weight in rubber. Examination under the microscope showed very little rubber had penetrated between the fibers of the yarn. If, on the other hand, the cord was first passed through a solution of Igepon T in water at the same rate, then dried in air, and subsequently passed through the latex, there was, as Table 1 shows, a considerable increase in the weight of the cord even with low Igepon T concentrations. After preliminary treatment with a 2% Igepon T solution, 80% of the cord weight in rubber was taken up by the cord, and the microscope showed that this time the rubber

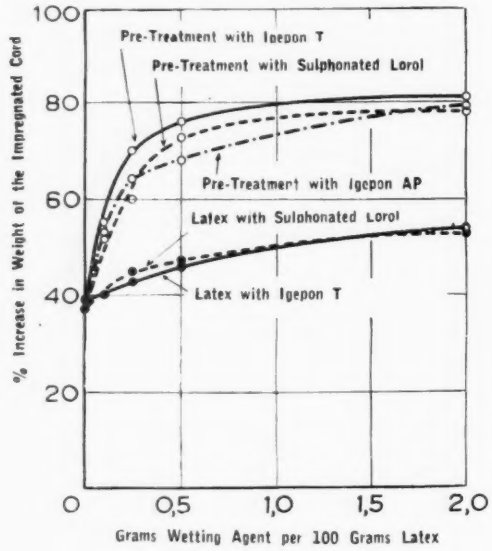


Fig. 4. Rubber Adsorption by Bicycle Tire Cord after Impregnation with Latex

had penetrated between the fibers and had taken up about 50% of the available space. These estimates are in the nature of the case only approximate.

TABLE 1. INCREASE IN WEIGHT OF CORD AFTER IMPREGNATION WITH WETTING AGENTS AT VARIOUS CONCENTRATIONS AND WITH A CONTACT PERIOD OF TWO SECONDS

Grams* Wetting Agent per 100 Grams Latex	Amount of Rubber Taken up, in % of the Fiber Weight					
	Wetting Agent in Latex			Treatment with Wetting Agent Solution, Then with Latex		
	Igepon T	Sulphonated Lorol	Igepon AP	Igepon T	Sulphonated Lorol	Igepon AP
0	39	37	..	39	37	37
0.1	40	40	..	55	52	53
0.25	43	45	..	70	60	64
0.5	46	47	..	76	73	68
2.0	54	53	..	81	78	79

*Presumably the concentrations expressed in this column, "Grams Wetting Agent per 100 Grams Latex", refer only to "Wetting Agent in Latex." In connection with the last three columns of the table, "Treatment with Wetting Agent Solution, Then with Latex", the concentrations in the first column undoubtedly represent the per cent. concentration of wetting agent in aqueous solution. This also should be considered in connection with Figure 4. EDITOR'S NOTE.

Increased penetration of the rubber between the fibers was obtained by reducing the rate of passage to 36 centimeters per minute and at the same time prolonging the bath through the latex so that the fibers were in contact with the latex for 50 seconds. Under these conditions and with the same preliminary treatment with a 2% Igepon T solution, the amount of rubber taken up was about 68% of the weight of the thread, and the microscope showed still further penetration between the fibers with about 80 to 100% of the available space between the fibers found to be occupied by the rubber. Figure 2 reproduces the microscopic picture obtained in this case.

The difference between the two impregnation methods used is that in the one case the wetting agent is concentrated on the surface of the fibers of the thread and in the other it is dissolved in the latex. The high concentration on the fiber surface greatly assists wetting while at the same time the wetting agent presumably stabilizes the fibers and the latex with respect to each other. Thus premature coagulation of the rubber particles on the outer surface of the thread is prevented, and all space between the fibers remains open to the penetrating latex. The rubber particles, therefore, are able to penetrate completely the interstices of the yarn, where the rubber dries after removal from the latex bath. Complete penetration also requires a definite period of time, as is indicated by the improved impregnation of the thread after 50 seconds of contact with the latex as compared with a contact period of two seconds.

Although a reduction in the rate of travel through the latex and an increase in the contact period lead to better impregnation than with the original traveling speed and contact period, it was found that the cord took up a smaller amount of rubber, that is 68% against 80% based on the fiber weight. It might have been supposed that a more thorough impregnation would have been accompanied by a greater increase in weight of the cord.

However a considerable portion of the rubber taken up is deposited on the outside of the cord, and the faster the cord is drawn through the latex bath, the heavier is this deposit and the greater the excess of latex. The latex dries on the outer surface and, although it adds to the weight of the fiber, takes no part in actual impregnation. Here, then, the increase in weight is not a reliable measure of the degree of impregnation.

Sulphonated Lorol

The same tests as those carried out with Igepon T were repeated with Sulphonated Lorol. In this case too the cord was impregnated with a mixture of latex and wetting agent and with latex alone after preliminary treatment with an aqueous solution of the wetting agent. As with Igepon T, pre-treatment with the wetting agent resulted in much better penetration between the fibers than when the wetting agent was added to the latex.

Reducing the rate at which the cord was drawn through the latex and increasing the period of contact of the cord with the latex to 50 seconds resulted in complete penetration so that, as the microscope showed, up to 100% impregnation of the available space between the fibers was also obtainable by using Sulphonated Lorol.

Igepon AP

Since Igepon AP is not resistant to alkali, no impregnation test was made with a mixture of this wetting agent and latex; the cord was impregnated only after preliminary treatment with the wetting agent. With the original rate of passage and contact period, 80% of rubber was taken up by the thread, but the microscope showed only

about 20% of the available space occupied by rubber. When the rate of passage through the latex was reduced and the contact period increased, the microscope showed 60 to 80% of the available space taken up by rubber, although the weight of the thread was increased by only 62%. Again the varying amount of latex carried along was the reason for the discrepancy between the microscopic picture and the increase in weight.

The above results with the wetting agents mentioned are set forth in Table 2.

TABLE 2. EFFECT OF THE ADOPTED METHOD ON THE DEGREE OF IMPREGNATION OF BICYCLE TIRE CORD WITH WETTING AGENTS

Method of Impregnation	Contact Period of Cord with Wetting Agent or Latex, Seconds	Dry Material Taken up % of Fiber Weight	Estimated Penetration in % of the Available Space between the Fibers
Single loosely twisted yarn:			
With latex alone	2	80	0
2% Igepon T solution, then with latex	2	150	100
Bicycle tire cord:			
With latex alone	2	40	0
2% solution of Igepon T in latex	2	54	5
First 2% Igepon T solution, then latex	2	80	50
First 2% Igepon T solution, then latex	50	68	80-100
2% solution of Sulphonated Lorol in latex	2	53	5
First 2% Sulphonated Lorol solution, then latex	2	78	50
First 2% Sulphonated Lorol solution, then latex	50	60	80-100
First 2% Igepon AP solution, then latex	2	79	20
First 2% Igepon AP solution, then latex	50	62	60-80

Summarizing, we may conclude from these observations that:

1. Mixing the wetting agent with the latex causes only very slight penetration of the rubber between the fibers of the yarn.
2. Treatment of the yarn with the wetting agent before impregnation with latex leads to better penetration of the rubber in the interstices than is possible by impregnation with latex alone or with a mixture of latex and wetting agent.
3. Prolonging the contact period of the thread with the wetting agent and with the latex causes the total amount of rubber taken up to be lower than when the thread travels more rapidly and the contact period is shorter, but the estimated penetration between the fibers is considerably greater.
4. By suitable selection of conditions and wetting agent, complete impregnation of a bicycle tire cord with latex is possible.
5. The increase in weight of the thread after various treatments proves an unreliable standard for judging the degree of penetration.

Fatigue Tests with Impregnated Cord

It has been found that a cord into which rubber has completely penetrated has a longer life, when repeatedly flexed, than a cord not so saturated with rubber. Therefore to determine whether the methods described, which, according to the microscopic picture gave varying degrees of impregnation, caused differences in the fatigue life of the cord, samples were subjected to fatigue tests. In these the cord was alternately quickly flexed and then stretched again, under not too great a tension, and this treatment was repeated until the cord broke. The duration from the beginning of the test up to rupture of the thread was taken as the measure of the resistance of the cord to fatigue.

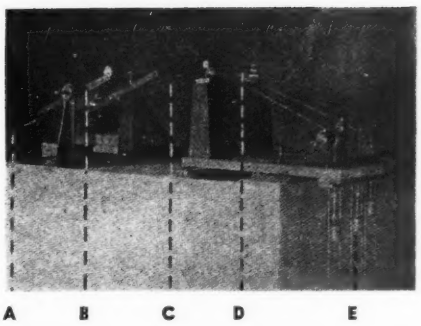


Fig. 5. King and Truesdale Fatigue Apparatus

A. To Counterpoise on Crank; B. Crank Actuated by Motor; C. Impregnated Cord; D. Loose Rolls; E. Tensioning Weights

In literature, two apparatus for fatigue testing of cord are mentioned: namely, that of King and Truesdale[27] and that of Stavely and Shepard.[28] The first, also used by Schiltuis, is available at the Mechanical Technology Section of the Technical Institute.[29] The fatigue tests were carried out with this apparatus.

The King and Truesdale apparatus, represented in Figure 5, consists of two spindles along which a cord is led. One end of the cord is attached to a crank and rotated at a constant rate of 36 turns a minute. From the other end is suspended a weight which rises and falls when the crank is turned and keeps the cord taut.

The cord is led over two horizontal rolls, first passing over the upper roll, then between the rolls, and then under the lower roll; thus when the crank is turned the cord is sharply flexed locally and then stretched again. When the cord breaks, the weight falls on to a recording device, and the end of the test is accurately noted. The cord used had a breaking strength of 2.7 kilograms and in the fatigue test was loaded with a weight of 450 grams. In Table 3 are shown the figures obtained with this arrangement using 18 observations per cord.

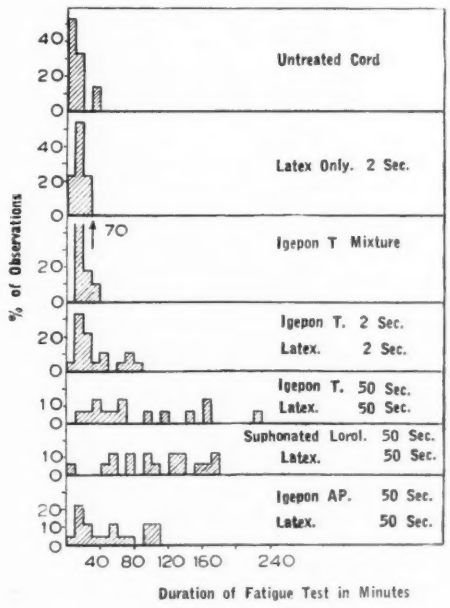


Fig. 6. Deviation of the Results of the Fatigue Tests

[27] *Textile Recorder*, 40, 88; 41, 86, 99, 103 (1923).
[28] *Ind. Eng. Chem.*, 19, 297 (1927).
[29] The author here wishes to thank S. A. van Hoytema, curator of the Mechanical Technology Division of the T. H. and A. C. ten Bruggencate, director of the National Fiber Bureau, for their cooperation and readiness in making this apparatus available.

TABLE 3. LIFE OF IMPREGNATED CORD

Method of Impregnation	Life in Minutes			Penetration of the Available Space between the Fibers, in % (Estimated from Microscopic Picture See Table 2)
	Minimum	Maximum	Mean	
Untreated cord	1	35	13	0
Two seconds with 20% latex	8	28	16	0
Two seconds with mixture of latex with Igepon T	10	38	16	5
Two seconds with 2% Igepon T solution, then two seconds 20% latex	6	87	34	50
50 seconds 2% Igepon T solution, then 50 seconds 20% latex	20	230	93	80-100
50 seconds 2% Sulphonated Lorol, then 50 seconds 20% latex	77	133	107	80-100
50 seconds 2% Igepon AP, then 50 seconds 20% latex	4	100	49	60-80

To give some idea of the *deviation* in the observed time periods, the data are graphically shown in Figure 6, which indicates the frequency-distribution relation of the results.

Although these results have only a relative value, Table 3 plainly indicates that the methods followed, which revealed various degrees of impregnation under the microscope, also had a considerable effect on the fatigue resistance of the impregnated cord. Taking into consideration that the microscopic observations are only estimates, and that the fatigue results show deviation, it may be concluded that both these methods indicate that the impregnation process in which the cord is previously treated with a wetting agent is preferable. The action of the wetting agent here not only consists in lowering the surface tension of the latex, but also in stabilizing the latex and the fibers with respect to each other, thus preventing coagulation on the outside of the cord.

Conclusions

1. Thin sections of yarn impregnated with rubber can be made in a simple manner according to the modified Kronacher-Lodemann method here described; and fibers, rubber, and embedding material can be clearly distinguished from each other.

2. Impregnation of a cord with latex in which a wetting agent is dissolved results in a far lower degree of penetration by the rubber than impregnation with latex following treatment of the cord with a solution of the wetting agent.

3. When the proper conditions and wetting agent are selected, bicycle tire cord previously treated with a wetting agent can be completely impregnated with latex.

4. There is a distinct connection between the microscopic picture indicating the degree of penetration of the rubber between the fibers and the results of fatigue tests.

The author wishes to thank A. van Rossem, director of the Research Department of the Rubber Foundation, for his cooperation in bringing about this publication.

Plasticized Polyamide Compositions[1]

THE objects of this invention are to prepare new compositions useful in making a variety of shaped articles, to improve the properties, particularly the moisture permeability and pliability, of the synthetic linear superpolyamides and articles derived from them, and to improve the oil resistance of certain rubber-like materials.

These and other objects are accomplished by incorporating rubber or rubber-like materials comprising polymeric aliphatic hydrocarbons and polymeric halogenated hydrocarbons into superpolyamides such as those described in patents Nos. 2,071,250, 2,071,253, and 2,130,948. These polymers, which may be cold drawn to fibers, showing molecular orientation along the fiber axis, are of two types, those obtainable from polymerizable monoaminomonocarboxylic acids and their amide-forming derivatives, and those obtainable by condensation polymerization of suitable diamines with suitable dibasic carboxylic acids or amide-forming derivatives of dibasic carboxylic acids.

Although synthetic linear polyamides as a class are microcrystalline, they may be formed into useful objects without solvents or plasticizers, by spinning, extruding, or otherwise forming the objects from the molten polyamides. To improve the properties of these products, they are subjected to compressive or tensile stress (cold working or cold drawing). The products are unusually strong, have high melting points, and for many purposes are sufficiently pliable. Greater pliability is sometimes desired, however, especially for films, sheets, etc.

Incorporating natural and synthetic rubbers into the superpolymers increases the pliability and lowers the moisture permeability of the products. Quantities of the rubber ranging from 1% to 75% by weight of the superpolymers are used to greatest advantage; the amount depends on the nature of the rubber material and on the properties required in the final product. Larger quantities of rubber, for instance, equal parts of rubber and polyamide, are useful when greater pliability together with less water absorption is desired. To improve the oil resistance of natural rubber, 25% of certain superpolymers may be added. The undesirably low softening temperatures of certain synthetic polymeric aliphatic hydrocarbons, such as polyisobutylene, may be raised by incorporating small amounts of superpolymer. Incorporation of the rubber material may be accomplished by stirring it in the fused superpolymer, adding the rubber material to the diamine and dibasic acid from which the superpolymer is prepared, or milling a mixture of the two materials on heated rolls.

Typical applications of the products of this invention are yarns, fabrics, bristles, surgical sutures, dental floss, fish lines, fishing leaders, rods, tubes, films, ribbons, sheets, safety glass interlayers, electrical insulation, molded articles, adhesives, impregnating agents, and coating compositions. These compositions are superior to unmodified polyamides in oil and moisture resistance, which makes them especially useful as films. Uses for the material in this form are wrapping foils, casings for sausages and other foods, and oil and milk containers. Because of the low moisture permeability, the compositions are good as electrical insulation. Hollow tubing formed by extrusion is valuable for use with oil and hydrocarbons, for instance as gasoline hose. The compositions may be tooled, machined, and calendered, owing to their great toughness, pliability, and plastic characteristics. Furthermore they may be compression molded and used in the preparation of blown articles, such as toys.

[1] Abstracted from U. S. patent No. 2,249,686, granted to Harry B. Dykstra, assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., July 15, 1941.

Maintenance of First-Aid Fire Protection Equipment

Leonard F. Maar[1]

SINCE the fire extinguisher is the first line of defense against fire, it is important that the equipment be properly maintained in service. Although maintenance practices are standard and full instructions appear on an instruction plate on each unit, the number of misconceptions that exist on the subject is surprising.

Practically the only thing that will cause an extinguisher to fail to operate is some fault in maintenance. An inoperative extinguisher is worse than no extinguisher at all for it only gives a false sense of security and may cause the waste of valuable time while another extinguisher is brought to the scene of an emergency. In rubber plants, where flammable solvents may be involved in fire, the fire must be stopped quickly before it spreads beyond control.

General Maintenance

Too often extinguisher maintenance is not carefully supervised and is left to the vagaries of irresponsible employes. It seems a small matter to insist that any chemicals used in recharging be dissolved in water in a pail or other container, and not in the extinguisher itself. Perhaps it is easier to dump the chemicals into the extinguisher shell, pour in the proper amount of water, and stir the solution with a stick for a few moments. But that method does not insure the full efficiency of the extinguisher; all of the chemical powder may not be dissolved, and, therefore, when the extinguisher is used, the balance of the chemical reaction is upset and the stream is not so powerful as it should be.

A thoroughly dependable man should be placed in charge of maintenance operations; so there will be no gambling with the protection these devices afford.

The 2½-gallon units, after being emptied, should be well rinsed with warm water, and the water should be drained through the hose. The strainer should be cleaned, and the holes opened with a wire if they have become clogged. Inspect the head gasket and the hose and replace them if there are signs of deterioration.

The chemical extinguisher is, after all, a pressure container, and it is important that the seams of the shell are tight. If signs of leakage appear, or if the extinguisher shell has been distorted, it is wise to send the extinguisher to the manufacturer for testing by a competent service man. "Home-made" repairs to the shell should not be attempted; this job requires special equipment.

In screwing the head back on the shell a small quantity of vaseline may be placed in the threads to facilitate the work, and make certain that at least four threads are engaged. Then the head can generally be removed by hand for the next recharging.

Recharging and Inspection

The simplest means of keeping a record of the date of recharging or inspection is the best. A tag is furnished with each new extinguisher, and some manufacturers furnish a tag with each package of recharging materials. On it can be noted the date the work is done and the name of the man doing the work.

Fire insurance underwriters as well as the manufacturers recommend that all recharging materials and replacement parts be obtained from the manufacturer.

Standard instructions for recharging and inspecting the various types of fire extinguishers follow:

SODA-ACID. Recharge annually. Dissolve powdered chemical thoroughly in lukewarm water in a container—not inside the extinguisher. Fill to filling mark. Remove cork from acid bottle and replace it with stopple before placing bottle in cage. At temperatures below 40° F. units of this type need protection in suitably heated cabinets.

FOAM. Recharge annually, dissolving the chemicals in water outside the extinguisher, and, if the same container is used for the two solutions, rinse it carefully each time it is used. Use hot water for dissolving the A, or acid charge, and lukewarm water for the B, or foaming agent. Where temperatures of less than 40° F. are encountered, foam units need to be protected in cabinets that are suitably heated.

VAPORIZING LIQUID. Recharge after use and keep filled at all times. Test the action of the pump by pumping some of the liquid into a clean, dry container. The liquid can be returned to the unit through the filler opening. Add enough liquid to bring level to normal. Guard against overfilling. No lubrication is used on the piston of this type of extinguisher. Never use water to test the extinguisher, nor should a commercial grade of carbon tetrachloride be used since it may contain water or chemical impurities. If the extinguisher is of the stored pressure type, a gage reveals air pressure and a glass port or peep sight shows the level of the liquid. It may be tested by discharging some of the liquid, which can be restored to the extinguisher and the air pressure replenished.

LOADED STREAM. Recharge after use and inspect annually. Weigh the gas cylinder. Loss of one-half ounce in weight is cause for replacing it with a new one. Note if filled to filling mark. When recharging, the chemical, if not obtained in solution, should be dissolved outside the extinguisher.

CARBON DIOXIDE. Recharge after use. Inspect annually to see if seal attached to the operating valve is intact. Weigh the unit, according to the directions on it, to make certain the weight equals that stamped on the unit. Loss of 10% in weight indicates need of recharging.

ANTI-FREEZE SOLUTION. Recharge all types immediately after use and inspect them annually. If of pump-action type, test the pump by operating it for several strokes, discharging the solution back into the tank. A drop of thin lubricating oil may be placed on the piston rod packing. If carbon dioxide is used for pressure, the gas container should be removed and weighed to detect leakage. Loss of one-half ounce in weight is cause for replacing the gas container with a new one. Note if extinguishers are filled to filling mark, and replace any of the solution that has evaporated. Anti-freeze crystals also should be dissolved outside the extinguisher.

[1] Safety Research Institute, 420 Lexington Ave., New York, N. Y.

EDITORIALS

Planning for the Future

TO INSURE the success of our efforts for national defense, it is important that there be an adequate and uninterrupted flow of rubber goods of practically all types coming from our production lines. Rubber products are not only vital for direct defense applications, but are indispensable for other industries engaged in defense production. Furthermore it is not difficult to foresee the possible serious disruption in public morale and efficiency should our supplies of civilian rubber goods be cut off or drastically curtailed. On the other hand it is necessary for us to restrict our consumption of crude rubber to assure a rapid accumulation of a reserve stockpile, adequate for any eventuality.

Thus it is imperative that the rubber industry make the fullest possible use of the limited amount of crude rubber available, and from this rubber produce as many products of a quality adequate for the intended service as is possible. To achieve this end, the rubber industry must be able to take full advantage of all the advances it has made in compounding and processing technique.

In a talk last month before the Division of Rubber Chemistry, J. P. Coe, of the Naugatuck Chemical Division of the United States Rubber Co., called attention to the importance of compounding materials to the continuance of the manufacture of high-quality rubber goods, emphasizing the savings in rubber that have been achieved by chemical improvements which have measurably increased the life of rubber goods. Carbon black, zinc oxide, and organic accelerators and antioxidants are but a few of the many rubber-conserving elements that go into a rubber compound. While no acute shortages of any of these materials now exist, Mr. Coe's remarks pointed out that the future is unpredictable and that now was the time to call the government's attention to the industry's requirements in this respect.

To serve adequately the nation's needs the rubber industry, in addition to crude rubber and the necessary compounding ingredients, must obviously have reclaimed rubber, synthetic rubber, and fabrics of a wide variety of types. The curtailment in crude rubber consumption has led to a greater relative use of reclaim, with indications that the ratio of reclaim to crude will further increase as crude rubber restriction becomes more drastic in the months to come. The reclaim industry is said to be producing at capacity levels now, and, despite current statistics which show nearly 40,000 long tons on hand, as of August 31, there have been some indications of a tightness in supplies. Thus while the reclaim industry reportedly may be able to care for the rubber industry's needs under the current crude rubber restriction program, the present situation in regard to supplies is not so favorable as to permit the question to be dismissed lightly. The problems relating to synthetic rubber production will become increasingly important in the months to come; rubber manufacturers, for example, will want to know if predicted production schedules are being met so that adequate preparations for compounding and processing can be made. The dependency of the rubber industry on the textile industry is well known; but textile manufacturers have been so taxed to meet defense and civilian demands that the rubber manufacturer cannot be complacent in regard to continued supplies from this source.

The procurement of the necessary processing equipment is also an important consideration in connection with the maintenance of the production of rubber goods. Although the situation in respect to equipment and machinery cannot be regarded as strictly parallel to that of raw material supplies, the ability of the rubber manufacturer to adjust his processing to meet defense needs may be seriously impaired if he is unable to obtain new equipment readily. As defense production gains momentum, the demands on the rubber industry will also quicken. Rapid changeovers from civilian to defense production may be required, and equipment procurement may become imperative.

Admittedly the problem of material and equipment supplies for the rubber industry is complex, but there are indications that some types of materials are becoming increasingly scarce and difficult to obtain. To avert possible future dislocations in the rubber industry's production schedules, this problem should be faced now.

To this end we suggest the formation of a planning committee composed of representatives from the rubber industry, the synthetic rubber industry, the reclaimed rubber producers, the suppliers of principal compounding ingredients, the textile industry, and the manufacturers of rubber processing equipment. The representatives from the rubber industry, who should include chemists fully acquainted with the industry's technological requirements as well as production executives, could make known the present and, as far as possible, the future needs of the rubber industry. Whether or not these requirements could be met would be the problem of the suppliers on the committee. In the event that a shortage of any material or type of equipment became imminent, representations could be made by the committee to the government so that provisions to offset the impending scarcity could be arranged before it was too late.

The task of organizing such a planning committee would appear to be a formidable one, but it is by no means unattainable. It might be pointed out in this connection that rubber chemists and technical men associated with manufacturers of compounding materials have been able, through the Division of Rubber Chemistry, A.C.S., to get together and exchange ideas for their mutual benefit. The initiative in forming this committee should come from the rubber industry, for its very existence depends upon a continual supply of a wide variety of raw materials. Perhaps the best way to launch such an enterprise would be to hold a conference at which the committee could be organized and the general problems involving material and equipment supplies could be discussed. It is hardly necessary to add that the time for action is now.

Reclaimed

RUBBER

LIKE NEW RUBBER

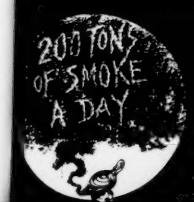
Needs

REINFORCEMENT

MICRONEX

Beads or Compressed

A COLUMBIAN COLLOID



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RECLAIM REINFORCEMENT

In compounding reclaimed rubber produced from whole tires it is necessary to estimate 60% as rubber substance and of the remainder at least 10% as carbon black. Additional black is required, however, to revitalize.

As a general suggestion add one-quarter of one pound of Micronex for every pound of whole tire reclaim in stocks which are designed to meet abrasion, or which require good all-around reinforcement.

In other words, reclaimed rubber requires the addition of some 25% of Micronex for reinforcement, just as a loading of 50 to 60% is required with natural or synthetic rubber.

Effective compounding of reclaimed rubber involves the use of proportionally more, rather than less, Micronex.

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MICRONEX MEANS MORE MILEAGE

What the Rubber Chemists Are Doing

Defense Symposium Highlights Rubber Division Meeting

A SYMPOSIUM on "Rubber for Defense" featured the meeting of the Division of Rubber Chemistry, A. C. S., in Atlantic City, N. J., September 11 and 12, in conjunction with the one hundred and second meeting of the parent society. At the symposium on September 11, 600 were present; while 400 attended the Division banquet in the evening; ten technical papers (abstracts of which appeared here last month), together with committee reports, were presented at the two sessions September 12.

C. R. Haynes (Binney & Smith), chairman of the membership committee, reported that membership in the division had increased from 700 to 790 during the past year. The executive committee, it was announced, had decided that the Division would meet in Memphis, Tenn., next spring during the one hundred and third meeting of the A. C. S. It was also officially announced that David Spence would be known as the first Charles Goodyear Lecturer, although Dr. Spence was unable to present his lecture at the meeting because of ill health.

The new officers, elected by letter ballot and announced at the meeting, follow: chairman, J. N. Street (Firestone); vice chairman, J. T. Blake (Simplex Wire); secretary, H. I. Cramer (Sharples Chemicals); treasurer, C. W. Christensen (Monsanto); sergeant-at-arms, C. P. Hall (C. P. Hall); directors, P. K. Frolich (Standard Oil Development); C. R. Park (Firestone); W. F. Tuley (Naugatuck Chemical); F. H. Amon (Cabot); R. H. Gerke (U. S. Rubber); S. G. Byam (du Pont); and C. C. Davis (Boston Woven Hose).

The Division banquet, held September 11 at the Ambassador Hotel, was an unusually successful affair, featuring good food and an excellent and varied program of entertainment. Credit for this event goes to Peter P. Pinto, (*Rubber Age*), who was assisted by Mr. Byam, A. H. Nellen (Lee Rubber), F. E. Traflet (Pequanoc), W. F. Lamela (Okonite), B. C. Ross (Vanderbilt), and G. W. Wyrough (Whitehead Bros.). The banquet entertainment was made possible through the generosity of the following concerns.

Advance Solvents & Chemical Corp., L. Albert & Son, American Cyanamid & Chemical Corp., American Zinc Sales Co., Binney & Smith Co., Godfrey L. Cabot, Inc., Continental Carbon Co., Curran & Barry, E. I. du Pont de Nemours & Co., Inc., Farrel-Birmingham Co., Inc., General Atlas Carbon Division of General Properties Co., Inc., C. P. Hall Co., Herron & Meyer, J. M. Huber, Inc., Midwest Rubber Reclaiming Co., Monsanto Chemical Co., Moore & Munger, H. Muehlstein & Co., Inc., National Rubber Machinery Co., Naugatuck Chemical Division of United States Rubber Co., New Jersey Zinc Sales Co., Pequanoc Rubber Co., Philadelphia Rubber Works Co., Pittsburgh Plate Glass Co., Rare Metal Products Co., St. Joseph Lead Co., A. Schulman, Inc., Henry L. Scott Co., Southeastern Clay Co., Standard Chemical Co., Stauffer Chemical Co., Thiokol Corp., Titanium Pigment Corp., U. S. Rubber Reclaiming Co., Inc., United Carbon Co., R. T. Vanderbilt Co., Inc., Vansul, Inc., C. K. Williams & Co., Wishnick-Tumpeer, Inc., Xylos Rubber Co.

Defense Symposium

Following introductory remarks by Dr. Gerke, retiring chairman of the Division, the first of the four defense symposium papers, "Cooperation of the Rubber Industry with Defense", was presented. Prepared by W. L. Finger, who had resigned from the OPM just prior to the meeting, the paper was read by Richard A. May, of the OPM. Mr. Finger's paper emphasized the vital role played by rubber in defense, directly and indirectly, and enumerated many of the rubber products essential for our armed forces.

J. N. Street

E. G. Holt, chief, Consumption Materials Unit, Department of Commerce, next spoke on "Present Status of Crude Rubber", explaining that, although we have more rubber in this country than ever before, we must continue to conserve rubber during the present emergency. Describing rubber as the "Achilles heel of defense", Mr. Holt predicted that greater control would come if conditions became worse. He also urged that a national viewpoint be quickly adopted in respect to the present emergency and that all companies in each industry act as a unit in promoting production for defense.

According to E. R. Bridgwater, manager, Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., who next spoke on "Present Status of Synthetic Rubber", production of synthetic rubber this year will total 11,700 long tons (neoprene, 6,300; butadiene types,

Photograph by Bachrach

John T. Blake

C. W. Christensen

Howard I. Cramer

4,000; and polysulphide types, 1,400) or only 1.5% of our crude rubber consumption. The picture for the end of next year was painted brighter—a monthly production of 1,600 long tons of neoprene, 900 of butadiene types, plus an added 3,300 tons of butadiene-styrene copolymer made in government-owned plants, or a total of 5,800 long tons monthly, not including polysulphide types, butyl rubber, or plasticized polyvinyl chloride polymers. The speaker estimated that in addition to the $11,000,000 for building the four government polymerization plants, an additional $25,000,000 will be required to build plants for the raw materials, butadiene and styrene. Referring to the government-owned plants, Mr. Bridgwater said it is expected that the Rubber Reserve Co. will probably sell the product at the prevailing price for natural rubber and accept the loss involved. To build plants with a total capacity of 30,000 tons monthly, would require an investment of half a billion dollars, the speaker estimated, and to supply labor, equipment, and materials would require serious sacrifices. Also considered were the post-war economic affects of synthetic expansion, the possibilities of further extended uses, and the properties of the various types of synthetics.

The symposium was concluded with a paper by J. P. Coe, general manager, Naugatuck Chemical Division of United States Rubber Co., on "Present Status of Rubber Chemicals and Reclaimed Rubber", in which the opinion was expressed that there appears to be an excess of reclaimed rubber over present requirements and sufficient organic chemicals and zinc oxide for the present. The Rubber Reclaimers Association, according to Mr. Coe, estimates U. S. reclaiming capacity at 300,000 long tons on a seven-day basis, which would provide for reclaim consumption at the ratio of 44% of the crude rubber base of 683,000 tons, established by the government, or at the ratio of 55% if crude usage is maintained at 80% of the base level. The question of expansion has been under discussion for over two years, the speaker pointed out, but large-scale expansion would interfere with the production of war equipment, and it remained to be determined if greater capacity is needed. Other factors involved in reclaiming were discussed—scrap rubber, caustic soda, pine tar, and power.

Mr. Coe next called attention to the synthetic organic chemicals used as accelerators, antioxidants, etc., which by extending the life of rubber have contributed measurably to savings in crude rubber. The importance of a continuance of their supply in order to maintain quality was pointed out, with emphasis placed on those chemicals derived from aniline, also important for munitions. Estimating that 20,000,000 to 25,000,000 pounds of accelerator and antioxidants were used in 1939 and 1940, the speaker pointed out that this would require between 12,000,000 and 17,000,000 pounds of aniline, or 30 to 40% of the total aniline production in 1939, and thus, with increased defense requirements, shortages in aniline-derived rubber chemicals might be expected. The speaker further said that zinc oxide production in 1941 is 30% above last year's figure, with this excess going to the rubber industry. In conclusion, Mr. Coe emphasized the importance of cataloging necessary vital chemicals for rubber manufacture and of calling the government's attention to the raw material requirements of these chemicals so that priorities, if necessary, may be applied.

Report of the Crude Rubber Committee

The Crude Rubber Committee has so far offered its tests as "tentative" standard tests, with the expectation that members of the Division of Rubber Chemistry who would wish to do so would try them out and submit their objections, if any, to the Committee. The Committee is very pleased to report that no serious objections have been raised to any of the tests offered, and so it concludes that the tests are generally acceptable.

The Crude Rubber Committee, therefore, proposes that the following tests be adopted as "Standard Tests" for crude rubber and will publish these tests in *Rubber Chemistry and Technology* as such tests and as adopted and approved by the Division of Rubber Chemistry. This publication of the tests will group them so that they will be available for use easily. At the same time, the tests are coded by letter and number so that they may be referred to conveniently.

Crude Rubber Tests

C1. Cure Characteristics
A standard recipe for evaluating a given sample of rubber as to its vulcanizing properties.

C1a. Material Specifications
The materials, except for the rubber, should be of specified quality in order to eliminate variations due to material. The specifications cover the materials used in the recipe and are for no other purpose.

V1. Viscosity (Plasticity) Test
The term viscosity is adopted in the standard test as this is a more exact terminology. Two methods of test are suggested: the Mooney shearing disk plastometer and the Williams parallel plate plastometer. The method of preparation of the sample is carefully described, and the test calls for milling to three different degrees of softness of the rubber to evaluate more accurately the viscosity properties.

W1. Water Absorption Index
This test, which is of particular interest to cable manufacturers, follows in general the method already used by the industry. The preparation of the sample is carefully outlined, and the percentage absorption is proposed as an index rather than the weight absorbed by a given area.

A1. Manganese Content
An analytical procedure for the determination of manganese is covered by this procedure.

A2. Copper Content
An analytical procedure for the determination of copper is covered by this test.

F1. Foreign Material
Although the Crude Rubber Committee has proposed two methods for the determination of foreign material, only the one carried out entirely in the laboratory, or the so-called "small sample" method is proposed for adoption as standard. The factory method is not adapted to cross-comparison of results, particularly between producer and consumer, and was issued by the Committee only to give information on a method found useful.

Latex Tests

L1. Sampling
This covers methods of sampling latex in drums and in tank cars.

L2. Total Solids
The conditions of evaporation and the size of sample to determine the total solids are described.

L3. Dry Rubber Content.
The determination of the solids precipitated by acid is covered by this test, which defines the conditions under which the acid addition is made and the sample dried.

L4. Coagulum
From various causes small particles of coagulated latex may sometimes be found in shipments of preserved latex. This test covers the determination of the amount of such particles.

L5. Methyl Red Titer or Alkalinity
Two general types of latex are considered:
(a) Latex containing no fixed alkali or base other than ammonia;
(b) Total ammonia content of latex which contains a fixed alkali.
The first is carried out by direct titration and the second by a distillation process.

L6. pH of Latex
The determination of the pH of latex with the glass electrode is described in detail.

L7. Viscosity and Yield Point
The use of a capillary tube for measuring the viscosity of latex has been found quite satisfactory, and the specifications for the equipment and conditions of operation are covered.

L8. Laying down a Film of Rubber
While this is not an actual test in itself, the proper method of laying a film of rubber for use in testing certain properties of the rubber in the latex must be specified. This section covers the point in question.

L9. Copper in Latex
The film of rubber made according to L8 is tested for copper by method A2.

L10. Manganese in Latex
Similar to L9 except that manganese is determined by method A1.

L11. Water Solubles
The water soluble material is at times of importance, and a

method of determining water solubles is covered.

I.12. Acetone Extract
The usual method of acetone extraction is used on a film of rubber from latex.

I.13. Mechanical Stability
A device for measuring this property and the proper conditions under which the determination should be made are outlined. Constant speed and controlled temperature together with a method of observing the endpoint by using a screen are the principal points.

The above covers all the tests so far proposed. The Crude Rubber Committee has also given further consideration to the development of a test to determine the aging properties of crude rubber. So far, a great deal of work has been done without reaching a definite conclusion. The problem has also been mentioned to rubber technologists in the Far East who are giving the matter some consideration. The present pressure of work for defense needs does not permit the Committee to carry on any volume of work; so the problem has been set aside temporarily, but will receive attention in the future when conditions have changed.

Another problem which has been given careful thought is sampling. In the method of testing rubber for water absorption, a method of removing a sample from a bale has been proposed. This method is satisfactory for the sampling of individual packages, but does not cover sampling lots of several packages. Each member of the division no doubt has some basis of drawing samples of groups of bales which he considers satisfaction, but no universally satisfactory method has been proposed. The Committee was very fortunate in having Dr. Smallwood, of the United States Rubber Co., read his paper to its members, and they agreed that co-operative work on the problem would be highly desirable. Under normal conditions this would now be under way, but the Committee feels that such an extensive undertaking cannot be started now. The matter is, however, on the agenda of the Committee for future consideration.

The Committee is glad to report that research work on rubber and latex is still going on in England and the Far East, and communications are exchanged between the Committee and rubber technologists in both countries.

The Committee has recently completed a very careful examination of a large sample of rubber from a Malayan plantation. The results are being submitted to the plantation, but are not made public.

Latex Testing—Mechanical Stability

The standard method of testing the mechanical stability of latex calls for a special piece of equipment which, unfortunately, is now unobtainable because of priorities on aluminum. The Committee would like to refer the members, meantime, to a less refined device, described before the division by Messrs. Novatney and Jordan. A description of this equipment may be found in the March 15, 1941, number of *Industrial and Engineering Chemistry, Analytical Edition*. This equipment is not recommended as alternative to the standard, but merely as a type of mechanism which can be employed with fairly satisfactory results during the emergency when the standard equipment is not available.

Future Activities

The immediate outlook for active work by the Committee does not look bright. As the work is not financed by any group, it must necessarily be placed second to the regular demands on the various members. In spite of this, however, the Committee strongly urges the Division to keep a committee for contact with technologists and to be ready to take up the study of some of the problems when conditions will allow. To discontinue the committee would be to break off a point of contact between producer and consumer technologists which has been and will continue to be of value. Regular reports to the division will be made, but the development of new tests will be delayed.

The Committee regrets the announcement of the resignation of two of its members: Dr. E. M. McColm, of U. S. Rubber, and W. D. Parrish, of the Hydrocarbon Chemical & Rubber Co. Both men have been most helpful and cooperative, and it is with regret that we accept their resignation because of other demands.

The Committee wishes at this time to thank the officers of the Division for their support and cooperation and also to thank those members of the Division who have been helpful in any way.

G. A. Sackett (Chairman)
E. M. McColm
W. D. Parrish
A. H. Nellen
R. A. Schatzel
J. C. Walton
E. W. Oldham

Fall, 1942, Meeting Scheduled for Buffalo, N. Y.

BUFFALO, N. Y., has been named as the scene of the Fall, 1942, convention of the A. C. S., and the Lafayette Hotel has been selected as headquarters for the Rubber Division by Burt W. Wetherbee, of the Globe Woven Belting Co., Inc. Mr. Wetherbee has been asked by the Local Section, Western New York, A. C. S., to supervise arrangements for the Division of Rubber Chemistry as far as local affairs are concerned.

Buffalo Group Meets on October 3

TWO speakers, Benton Dales, of Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., and R. E. Nelson, of the Naugatuck Chemical Division of United States Rubber Co., will address the Buffalo Group, Rubber Division, A. C. S., at a meeting scheduled for October 3, 7:00 p. m., in the Hotel Lenox, Buffalo, N. Y. Dr. Dales will discuss the synthesis and application of neoprene latex, and Mr. Nelson will read a paper which is entitled "Rubber Dispersons."

Nominations for officers for the coming year and the fall program of the Group will be considered at the meeting.

New York Group to Hear Prize Winning Papers

THE three winning papers of the annual prize essay contest of the New York Group, Rubber Division, A. C. S., will be read at the fall meeting of the Group on Friday, October 17, at the clubrooms of the Building Trades Employers' Association, 2 Park Ave. The papers to be read at 4:00 p.m., are "The Economics of the Use of Neoprene Reclaim", "A Manometric Test for Oxygen Absorption by Vulcanized Rubber", and "Cold Vulcanization of Rubber Under Stress." Two motion pictures will be shown by Andrew Hale, of Farrel-Birmingham Co., Inc. The films are scheduled to follow the dinner, which will be served at 6:30 p.m.

Akron Group to Meet on November 7

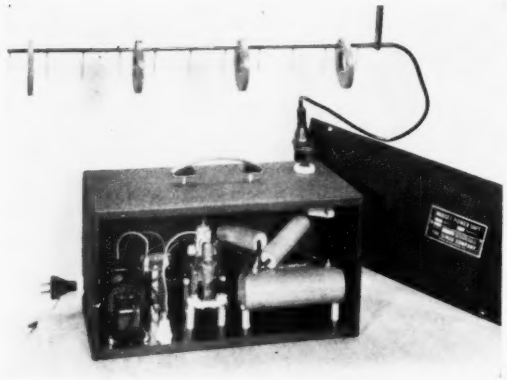
T. H. TROLLER, director of the Daniel Guggenheim Airship Institute, will address the first meeting of the 1941-1942 season of the Akron Group, Rubber Division, A. C. S., to be held in the Akron City Club on November 7. Dr. Troller's topic will be "Aeronautic Research and Military Aviation."

A.S.T.M. Approves Standards

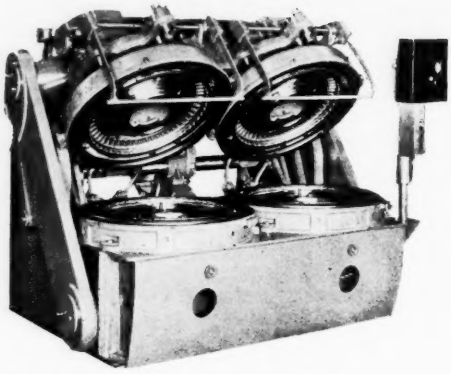
TO counteract the difficulties wire and cable manufacturers face in obtaining 40-inch sheeting of the designated type, Committee E-10, meeting on August 25 and having authority to act for its parent organization, the American Society for Testing Materials, approved an emergency alternate modification of the Standard Specifications for Insulated Wire and Cable (D27-41) which provides for two alternate sheeting types. Other action by E-10 included the approval, on recommendation of Committee D-11 on Rubber Products, of two test methods covering sampling and testing of rubber latex (D640-41T) and testing asphalt composition battery containers (D639-41T). In recommending the first of these tests, which describes methods for sampling and for measuring the variability of normal and concentrated latex, Committee D-11 considered the proposed method developed by the Crude Rubber Committee, Division of Rubber Chemistry, A. C. S. Revisions

(*Continued on page* 90)

New Machines and Appliances



Simco Static Eliminating Device



McNeil Twin Tire Curing Unit

Ionizer for Elimination of Static Electricity

CHARGES of static electricity which are generated by rubber spreading machines and which normally fill the surrounding air as well as the rubberized cloth are said to be eliminated as fire hazards by a recently developed ionizer that neutralizes the charges when placed above the cloth. Using a new method of electrically ejecting static charges out into space, the ionizer produces a static field equivalent to that of 100,000 volts D.C.; only a few thousand volts are generated by the ionizer to accomplish this. The ionizer consists of three transformers, a rectifying tube, and three Simco Neutrastats mounted in an iron box, eight by eight by 15 inches. The static bar is above the unit and is connected by a single-pole, two-piece connector to the ionizer power plant. One ionizing bar mounted about a foot above the cloth and about two feet from the spreader knife will neutralize static in and above the cloth for some distance; while the application of another bar just before the cloth is rewound will remove any other static charges which may have formed. The ionizer may also be applied to the elimination of static electricity in rubber power transmission belts. Simco Co.

Twin Tire Press

OF ALL-STEEL construction, the twin tire curing press, illustrated, is designed to be used with high internal pressures. By eliminating the center arm, the overall length of the press is reduced, and the floor space required for a battery of the presses is consequently less. Maintenance problems are also said to be minimized by elimination of the center arm because only about one-half the number of bearings used in the three-arm design is required in the present two-arm design. The presses are said to be suitable for steam jacketed molds or steam backs, or they may be fitted with steam domes for use with pot heater molds. The new presses retain such features as full automatic control, electrical operation, and the automatic stripping feature which is combined with the automatic safety and stripping bar. The McNeil Machine & Engineering Co., 96 E. Crosier St., Akron, O.

Hydraulic Pressure Switch

Dual Capacity Hydraulic Pressure Switch

A NON-FLUTTER, snap-action hydraulic pressure switch is designed to permit the removal of its hydraulic piston to be replaced by a piston of another size. Thus the operating range can be shifted from 200 to 1,000 pounds per square inch to a maximum of 900 to 3,000 pounds per square inch. Adjustment of the switch to balance the hydraulic pressure at any selected point is by means of a spring loaded screw. Adjustments can be made to permit working to within five pounds. Electrical connections are so arranged that the switch can be used as normally open or normally closed and also to control the cycling of more than one machine or process. A plate glass window in the case permits quick determination of "on" or "off" position of the contacts. The instrument measures five by six by 2½ inches and weighs ten pounds. Hydraulic connection is through a ¼-inch standard pipe fitting. Progressive Welder Co.

The Impressor shown above indicates the hardness of such materials as hard rubber, plastics, and soft metals in an instantaneous direct reading produced by a slight pressure against the material being tested. Barber-Colman Co.

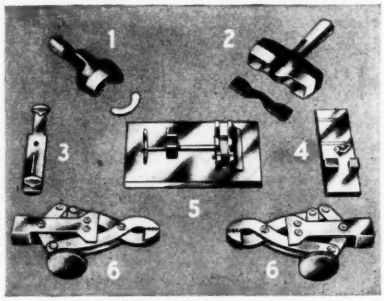
Equipment for Producing Tear Test Specimens

NEW equipment for preparing specimens for tear resistance tests in accordance with the recently approved procedure of the American Society for Testing Materials (D624-41T) consists of two dies, knife holder, depth gage, and vise. The equipment also includes pincer-type jaws for gripping the specimen in the testing machine. The chief innovation in the new equipment

is the application of a single nick in the specimen in place of the multiple radial nicks formerly used.

In preparing the specimens for test, at least three transverse and three longitudinal samples (from 0.070- to 0.110-inch thick each) are punched out with either a Type "A" or a Type "B" die (illustrated). Lubricated with soap solution, the specimens are clamped, three at a time, in a quick acting vise which is provided with guides for the single-blade knife holder and which is open in construction to expedite loading and unloading. Using the depth gage the single-knife blade is adjusted so that it extends out of the knife holder exactly 0.020-inch. The holder is then run back and forth over the specimens in the vise, nicking them uniformly and simultaneously.

The pincer-type jaws, which reportedly afford a more positive grip than the toggle or roller-type jaws, are used in the pulling operation on the testing machine. It is possible to insert specimens



Tear Resistance Test Equipment

1. Die for Type "A" Specimens; 2 Die for Type "B" Specimens; 3. White Bronze Single-Blade Knife Holder; 4. White Bronze Depth Gage; 5. White Bronze Quick Acting Vise; 6 Nickel-plated Steel Pincer-Type Jaws

in these jaws with a high degree of accuracy so that the direction of pull is exactly in line with the axis of the punching, according to claims. Akron Equipment Co., Akron, O.

Micrometer Measures Thickness as Closely as 0.0001-Inch

COMBINING a precision micrometer head with an electronic control unit, the Carson electronic micrometer is said to provide for the "pressureless" measurement of the thickness of such soft or compressible materials as rubber, fabric, cork, foil, felt, fiber, certain plastics, and paper. Thickness of soft rubber such as used for lineman's gloves, for example, can be measured to closer than 0.0001-inch, and on rubber sheet as thin as 0.001-inch, thickness variations of 0.00005-inch can be readily detected, it is claimed. Also films of Pliofilm, cellophane, and polystyrene can be measured without damage.

The piece to be measured is placed between the jaw of the instrument, and the upper jaw which is concentric with the micrometer spindle rests upon the work, holding it flat against the anvil.

Model L45 Electronic Micrometer Measuring Rubber Dumbbell Specimen Cut from a Lineman's Glove

The contact to operate the electronic unit is made between the micrometer spindle and electronic contact point within the jaw weight. Contact between the micrometer spindle and a small metallic rider resting on the rubber or other material is indicated immediately by a small green light which flashes before any pressure is exerted on the piece being measured. For precision thickness measurements over small areas a spherical contact surface, which rests on the work, is used. With this the material can be "explored" to find minute variations in thickness, holes, pits, or lumps on thin rubber, etc. Changes in thickness with temperature, humidity, or other variables can be measured as well with this instrument.

The micrometer, which operates from a 110-volt, 60-cycle circuit, is made in three standard models, L45, L35, and L25. A number of special fittings and attachments provide for specific measurement problems. Instrument Specialties Co., Inc.

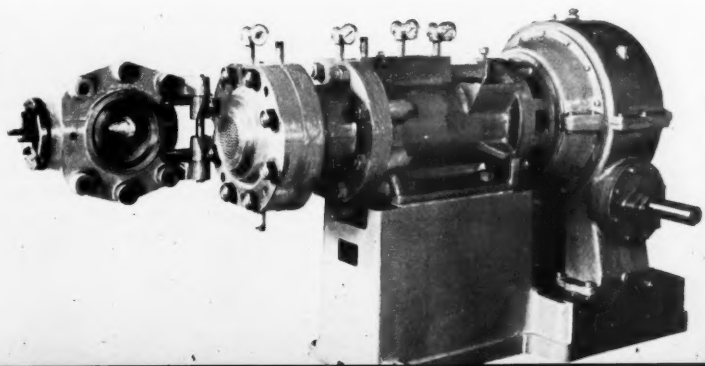
Waste Paint Removal from Spray Booths

THE removal of accumulated waste paint in sheets from spray booth walls is said to be facilitated by the use of Boothcote, a non-toxic, non-inflammable spray booth coating which will not harm the skin. The procedure consists of spraying Boothcote on the clean metal walls of the booth, allowing waste paint to be deposited on the Boothcote coating during normal operation, and finally removing the accumulation of waste paint by peeling it off in sheets as large as the operator can handle. The booth is then resprayed with Boothcote and placed back in production. Boothcote is said to be equally effective in the removal of rubber latex, enamel, or lacquer from spray booths. Harris Soap Co.

New Insulating Head in Royle Six-Inch Extruder

BASED on a new development which has reportedly found successful application in both the rubber and the plastics fields, the insulating head in the new Royle six-inch high temperature extruding machine incorporates a new type of adjustment for centering the wire or other form to be covered and for regulating the amount of stock going into a layer of given thickness. A maximum die size of three inches is used with this insulating head; consequently the outside covering of the rod, tube, or electrical conductor being insulated cannot be more than three inches in diameter. With a standard tubing head the maximum die size would be in excess of four inches. The insulating jacket normally used with smaller machines is not necessary in this larger size, but it may be provided if desirable; such a jacket is made in two sections to facilitate removal if necessary, and provisions are made for heating it by oil. A 50-hp. motor is utilized for activating the gear drive which may be either worm or herringbone gear, fully-enclosed and self-lubricating. John Royle & Sons, Paterson, N. J.

Royle Six-Inch High Temperature Plastics Extruder, Shown without Jacket and with Insulating Head Open



UNITED STATES

Crude Rubber Prices Set by Rubber Reserve Co.

Jesse Jones, Federal Loan Administrator, announced on August 6, 1941, that Rubber Reserve Co. would make crude rubber available to the manufacturing industry at 22½¢ per pound for No. 1X ribbed smoked sheets, with appropriate differentials for other types and grades, which arrangement was concurred in by Leon Henderson, director of the Office of Price Administration and Civilian Supply.

Supplementing his previous statement, Mr. Jones announced on September 13 that the various types and grades of crude rubber would be made available to the manufacturing industry ex-dock, ex-warehouse, or f.o.b. cars New York City, Boston, Baltimore, New Orleans, Los Angeles, and San Francisco at the option of Rubber Reserve Co., at the following prices:

Grade	Price
No. 1X ribbed smoked sheets in bales	22½
No. 1X ribbed smoked sheets in cases	22¼
No. 1 ribbed smoked sheets in cases	22⅛
No. 1 ribbed smoked sheets in bales	22⅛
No. 2 ribbed smoked sheets in bales	22¼
No. 3 ribbed smoked sheets in bales	22
No. 4 ribbed smoked sheets in bales	21¾
No. 5 ribbed smoked sheets in bales	20⅝
No. 1X thick pale latex crepe in cases	23⅛
No. 1X thick pale latex crepe in bales	23
No. 1 thick pale latex crepe in cases	23⅛
No. 1 thick pale latex crepe in bales	22⅞
No. 2 thick pale latex crepe in cases	22⅛
No. 2 thick pale latex crepe in bales	22⅛
No. 3 F.A.Q. thick palish latex crepe in cases or bales	21⅞
No. 1X thin pale latex crepe in cases	23⅛
No. 1 thin pale latex crepe in cases	23⅛
No. 2 thin pale latex crepe in cases	22⅛
No. 2 thin pale latex crepe in bales	22⅛
No. 3 F.A.Q. thin palish latex crepe in cases or bales	21⅞
No. 1X thick brown crepe in bales	21⅜
No. 2X thick brown crepe in bales	21⅛
No. 3X thick brown crepe in bales	20
No. 1X thin brown crepe in cases	21⅜
No. 1X thin brown crepe in bales	21⅜
No. 2X thin brown crepe in cases	21⅛
No. 2X thin brown crepe in bales	21⅛
No. 3X thin brown crepe in cases	20
No. 3X thin brown crepe in bales	20
No. 1 thick remilled blanket crepe in bales	21⅜
No. 2 thick remilled blanket crepe in bales	21¼
No. 3 thick remilled blanket crepe in bales	21⅛
No. 4 thick remilled blanket crepe in bales	20⅝
No. 1 thin brown remilled crepe in bales	21¼
No. 2 thin brown remilled crepe in bales	21⅛
No. 3 thin brown remilled crepe in bales	20⅝
No. 4 thin brown remilled crepe in bales	20
No. 1 rolled brown in bales	17½
No. 1 smoked blanket	21⅞
No. 2 smoked blanket	21
Claro Brand No. 1X RSS in cases	22⅝
No. 1X RSS European estates trimmings in cases or bales	22
Sole crepe trimmings and/or No. 1X thin pale crepe trimmings in cases or bales	22⅞
R.C.M.A. watermarked crepe type No. 16 in cases	26⅜
R.C.M.A. watermarked crepe type No. 17 in cases	25⅞
R.C.M.A. watermarked crepe type No. 18 in cases	24⅜
Sole crepe (Harrison & Crossfield and R.C.M.A.) in cases	*28⅛

*Plus import duty.

Mr. Jones further stated that the manufacturers who use crude rubber would be immediately advised of the procedure to be followed in purchasing rubber from Rubber Reserve Co.

R. F. C. Report

Commitments made by the Reconstruction Finance Corp. to aid defense totaled an approximate $3,902,952,578 as of September 13, according to a report submitted by Jesse Jones, Federal Loan Administrator, to President Roosevelt and Congress describing the activities of the R. F. C. and affiliates in connection with national defense. $5,000,000 was subscribed to the capital stock of the Rubber Reserve Co., which, with approval of the R. F. C., has an agreement with the International Rubber Regulation Committee to purchase up to 430,000 tons of Far Eastern crude rubber, costing approximately $190,000,000, and also has an agreement to purchase up to 30,000 tons of Brazilian rubber in the years 1941, 1942, and 1943 at a maximum cost of approximately $20,000,000.

The report said that 140,318 tons of rubber had been delivered, 66,391 tons were in transit, and 150,601 tons were waiting shipment as of September 13. Of the total purchased (357,310 tons), 157,972 were contracted for before the central buying plan went into effect June 23, 1941, and 199,338 tons have been purchased since that date. The balance of the 430,000-ton reserve should be realized by June 30, 1942, according to the report. At present rubber is being purchased at the top of the price range specified in the agreement with the I. R. R. C., 18½¢ per pound for standard 1X ribbed smoked sheets, f.o.b., transoceanic ships, Asiatic ports, it is further stated in the report.

In addition to the money made available for four synthetic rubber plants, funds have been allocated by the R. F. C. to the following plants for defense work: Monsanto Chemical Co., $15,000, for designs and specifications for proposed styrene plant; and Standard Oil Co. of Louisiana, $7,464,000, for construction and equipment for manufacture of butadiene.

Army Regulation No. 5-340, which took effect on August 10, 1936, and prohibited the use of all but 18 materials from foreign sources, has been revised, and 143 materials may now be used regardless of their country of origin in the making of supplies or equipage for procurement by the Army. The office of the Quartermaster Supply Officer at the San Francisco General Depot has issued specifications listing these 143 materials which no longer must be mined, produced, or manufactured wholly from within the United States. Included are aluminum, aniline, copper (and ores), cork, long-staple cotton, natural gums and resins, nitrogen compounds, polyvinyl chloride, titanium (and ores), and zinc oxide.

CALENDAR

Oct. 3.	Boston Rubber Group. University Club.
Oct. 3.	Buffalo Rubber Group. Hotel Lenox.
Oct. 3.	Detroit Rubber and Plastic Group. Leland Hotel.
Oct. 6-9.	National Safety Congress. Stevens Hotel, Chicago, Ill.
Oct. 6-11.	Fire Prevention Week.
Oct. 7.	Los Angeles Rubber Group. Hotel Mayfair.
Oct. 10.	Chicago Rubber Group. Congress Hotel.
Oct. 11-14.	N.A.W.M.D. Fall Convention. San Francisco, Calif.
Oct. 12-15.	A.S.M.E. Fall Meeting. Louisville, Ky.
Oct. 17.	New York Rubber Group. Building Employers' Trade Ass'n.
Oct. 30-31.	Association of American Battery Mfrs. Inc. Annual Convention. Palmer House, Chicago, Ill.
Oct. 30-31, Nov. 1.	S.A.E. National Aircraft Production Meeting. Biltmore Hotel, Los Angeles, Calif.
Nov. 3-5.	American Institute of Chemical Engineers. Cavalier Hotel, Virginia Beach, Va.
Nov. 7.	Akron Rubber Group. Akron City Club.
Dec. 1-5.	A.S.M.E. National Meeting, Hotel Astor, New York, N. Y.
Dec. 1-6.	18th Exposition of Chemical Industries. Grand Central Palace, New York, N. Y.
Dec. 29-31.	A. C. S. Division of Organic Chemistry. Ninth National Organic Chemistry Symposium. Ann Arbor, Mich.

Office of Price Administration, through Administrator Leon Henderson, on August 30 asked producers, dealers, and purchasers of industrial solvents not to raise prices on these chemicals above the level of July 29, 1941, without first consulting the OPA.

The United States Department of Commerce, Washington, D. C., recently reported that replacement sales of automobile casings to consumers during the second quarter of 1941 totaled 13,078,000, a high record for recent years and 20% above the 10,900,000 for the second quarter of 1940, when business was also above normal. During the first quarter of this year the replacement sales of 6,125,000 casings were 129,000 lower than in the first quarter of 1940; hence a similar small part of the second quarter buying may represent delayed demand.

The Bureau of Clearance of Defense Industry Advisory Committees on September 18 appointed nine subcommittees for the Defense Industry Committee on shoes, leather products, hides, skins and leather. One of the subcommittees is for rubber footwear and rubber materials for shoes. Its members are: H. S. Marlor, United States Rubber Co.; C. L. Muench, Hood Rubber Co.; C. H. Baker, Goodyear Footwear Corp.; H. S. Post, Goodyear Tire & Rubber Co.; and M. Bernstein, Panther-Panco Co.

Supply Contracts Awarded

Among recent listings of supply contracts awarded by different departments of the United States Government were:

NAVY: *cable,* Okonite Co., $384,491; *ponchos,* Marathon Rubber Products Co., $119,477.

WAR: *aniline oil,* United States Rubber Co., $65,000; *bags,* Marathon, $50,003; *balloons and inflation equipment,* Air Cruisers, Inc., $152,369; *batteries,* Electric Storage Battery Co., $388,342; *bearings,* Timken Roller Bearing Co., $22,301; *belts,* $502,351; *belts and blocks,* Gates Rubber Co., $2,995; *brushes,* Pittsburgh Plate Glass Co., $61,486; Rubberset Co., $64,938; *cable and wire,* Acorn Insulated Wire Co., $1,138, Anaconda Wire & Cable Co., $313,256, Circle Wire & Cable Corp., $3,920, Crescent Insulated Wire & Cable Co., $148,437, General Cable Corp., $7,007, General Electric Co., $12,675, Simplex Wire & Cable Co., $15,000, Whitney Blake Co., $1,243; *cable and reels,* General Cable, $1,047, Simplex, $120,270, U. S. Rubber, $342,827; *canister and carrier assemblies,* Firestone Tire & Rubber Co., $423,355; *cement, rubber,* R. M. Hollingshead Corp., $1,994; *chains, tire, and adjusters,* Shirley Olcott & Nichols, $61,889; *chemicals,* American Cyanamid Co., $1,038,800, E. I. du Pont de Nemours & Co., Inc., $22,570; *coats,* Los Angeles Rubber & Asbestos Works, $1,458, U. S. Rubber, $1,696; *combs,* Bolta Comb Co., Inc., $8,600, Vulcanized Rubber Co., $12,000; *containers and ink bottles,* American Hard Rubber Co., $1,325; *cutters,* Farrel-Birmingham Co., Inc., $1,152; *deicer shoes,* B. F. Goodrich Co., $111,862; *dental supplies,* S. S. White Dental Mfg. Co., $110,789; *disks, tire,* Budd Wheel Co., $4,648; *disks, valve,* Goodrich, $4,308; *duck,* Mt. Vernon-Woodberry Mills, Inc., $951,200; *faceblanks,* Acushnet Process Co., $32,500, Goodyear Tire & Rubber Co., $132,500; *faucets,* Chicago Rubber Clothing Co., $680; *field equipment and supplies,* Amer. Hard Rubber, $1,325; *footwear,* Converse Rubber Co., $141,410, Goodall Rubber Co., $7,787, Goodyear Footwear Corp., $37,275, Goodyear Rubber Co., $13,650, Hood Rubber Co., Inc., $411,520, Mottman Mercantile Co., $447, Ralphs-Pugh Co., Inc., $5,043, Sears Roebuck & Co., $244, Steinberg & Sons, $384, Union Hardware & Metal Co., $594, U. S. Rubber, $566,264; *forgings,* United Shoe Machinery Corp., $1,390; *fuel and oil,* Skelly Oil Co., $161,800; *gasoline and oils,* Socony-Vacuum Oil Co., Inc., $819,797; *gloves,* Edmont Mfg. Co., $5,071, Goodall, $634, Miller Rubber Co., $12,600, Sam Shucklin Co., Inc., $350, War Supplies, Ltd., $375,920, Wells Lamont Smith Corp., $2,835; *grinding wheels,* Abrasive Co., $1,100, Bay State Abrasive Products Co., $2,780, Norton Co., $9,610; *gun carriages,* Firestone, $37,922,560; *hats,* Cambridge Rubber Co., $3,168, L. A. Rubber, $269, U. S. Rubber, $11,851; *hose,* Boston Woven Hose & Rubber Co., $3,017, Mercer Rubber Co., $3,150, Raybestos-Manhattan, Inc., $4,518, Schacht Rubber Co., Inc., $1,569; *hose and wrenches,* Boston Woven Hose, $27,194; *indicator assemblies,* Cambridge Instrument Co., Inc., $359,879; *jackets,* Goodall, $1,824, L. A. Rubber, $263, U. S. Rubber, $730; *mount, tripod,* Crown Cork & Seal Co., $2,713,926; *mountings,* Lord Mfg. Co., $6,034; *mouthpieces,* General Tire & Rubber Co., $10,052; *patch, facepiece,* Plymouth Rubber Co., Inc., $6,500; *phosphorus,* Monsanto Chemical Co., $193,750; *plaster,* Seamless Rubber Co., $11,285; *overalls,* Goodall, $1,497; *presses, parts for,* Baldwin-Southwark Corp., $3,102; *pumps, tire,* Ajax Auto Parts Co., $1,450, Presto Gas Mfg. Co., $1,658; *rainwear,* Archer Rubber Co., $25,992, Cable Raincoat Co., $270,427, Chicago Rubber, $273,727, Goodall, $2,577, Kay Sportswear Co., $417,000, Monarch Coat Co., $147,459, A. J. Tower Co., $1,076, U. S. Rubber, $2,671,120, A. B. Zuckert Co., $288,799; *rivets,* Goodrich, $56,802; *rubber (denture),* Atlantic Rubber Mfg. Co., $8,288; *rubber bands,* General, $18,572, Goshen Rubber & Mfg. Co., $4,625; *screening machines,* J. H. Day Co., $45,310; *scout cars, parts for,* Firestone, $6,060; *seals,* Garlock Packing Co., $4,228; *sprinkler,* Amer. Hard Rubber, $700; *suits,* Archer, $9,788, Chicago Rubber, $3,150, Hodgman, $6,474, U. S. Rubber, $14,700; *surgical supplies,* Tyer Rubber Co., $3,376; *tape,* Coated Products, Inc., $12,071; *testers,* Henry L. Scott Co., $1,152; *thermometers and supports,* Taylor Instrument Cos., $597; *tires and tubes,* Dayton Rubber Mfg. Co., $12,019, Dunlop Tire & Rubber Co., $84,375, Firestone, $184,585, General Tire, $29,985, Goodrich, $12,304, Goodyear Tire $3,318, Mansfield Tire & Rubber Co., $555,600, Mohawk Rubber Co., $2,867, Pennsylvania Rubber Co., $3,897, Seiberling Rubber Co., $15,655, U. S. Rubber, $14,987, United States Rubber Export Co., Ltd., $31,150; *tires, tubes, and flaps,* Goodyear Tire, $62,017; *track assemblies,* Goodyear Tire, $3,584; *tracks, band,* Firestone, $975,650, Goodrich, $3,170,961, Goodyear Tire, $868,689; *trousers,* Archer, $18,502, Cable Raincoat, $27,501, Interstate Mfg. Co., $101,350, L. A. Rubber, $191, U. S. Rubber, $321; *tube assemblies,* Goodyear Tire, $78,960; *tubs,* Amer. Hard Rubber, $29,395; *valves,* Lower Rubber Mfg. Co., $16,124; O'Sullivan Rubber Co., $54,128; *webbing,* Everlastik, Inc., $21,426, Russell, $112,576, United Elastic Corp., $35,189.

General License 72, issued September 4, permits blocked nationals to file patents in the United States Patent Office, but the accompanying application must bear notice that they are being filed under this license. Also, payments of fees are licensed to permit patent applications to blocked countries. The order, however, does not allow blocked nationals to apply for patents in any foreign country.

Philip B. Fleming, administrator of the wage and hour division, United States Department of Labor, Washington, D. C., on September 15, announced a revision of the record-keeping regulations under which 350,000 employers, who have employes engaged in interstate commerce or in the production of goods for interstate commerce, must keep payroll and other records concerning more than 15,500,000 workers.

Army Tire Recapping

Approximately 50% of the rubber used in tires on Army vehicles may be conserved by retreading, according to the United States Department of War, which recently completed a nation-wide survey of private retreading firms. Bids have been requested by the Quartermaster Corps to mold a rugged type of non-skid tread on thousands of used tires on Army passenger cars and trucks.

In recent experiments at Holabird Quartermaster Depot, Baltimore, Md., both recapped and retreaded tires were run on a 9,000-mile convoy, and it was learned that a tire recap lasts about 80% of the normal service of an original tread. Reconditioning costs approximately 40% of the price of new tire.

The Army study of commercial tire-reconditioning establishments indicated that approximately 4,500 firms recap tires, with an estimated 2,000 plants on the West Coast. It also was learned that private firms can retread tires at far less cost than the Army—a conclusion backed by the experience of the British army, which has used tires retreaded by civilian experts for its motorized equipment and Royal Air Force planes for many months. However it is possible that the Army will buy its own recapping equipment for use in the Philippines, Hawaii, Newfoundland, and other outlying bases.

The use of mobile-type retreading equipment will conserve space now used for carrying new tires. For example, a new 750-20 tire used on the most common trucks in the Army, 1½ and 2½ tons, requires 4.7 cubic feet of cargo space; while the capping material requires only 0.8 cubic feet.

SPAB Created

To expedite all-out defense President Roosevelt on August 28 created within the Office for Emergency Management a Supply Priorities and Allocations Board, which will divide available materials, power, fuel, and other commodities among military, defense, and total civilian needs of the United States, and allocate supply among the different civilian uses. The Office of Production Management will administer the program.

The President also established machinery for fixing priorities and allocation of the supply of materials, power, fuel, and other commodities of all kinds. The Executive Order, realizing that priorities will necessarily create a shortage of certain materials for civilian use, in setting up machinery to divide the available supply of materials, will equitably allocate the supply among the different civilian industries and users.

Executive personnel of the SPAB consists of the existing board of the OPM: the Secretaries of War and of the Navy, Wm. S. Knudsen, and Sidney Hillman; and three additional officials: Price Administrator Leon Henderson, Harry L. Hopkins, and Vice President Wallace. Donald Nelson was appointed executive director of the board and Vice President Wallace is chairman.

OPM Reorganized

Wm. S. Knudsen, director general of the Office of Production Management, on August 29 announced that the OPM will function through six divisions: Civilian Supply, with Leon Henderson as director; Labor, Sidney Hillman; Materials, Wm. L. Batt; Priorities, Donald M. Nelson; Production, W. H. Harrison; and Purchases, Douglas L. MacKeachie. Mr. Nelson succeeds Edward R. Stettinius, who has been appointed Lend-Lease Administrator by President Roosevelt; while J. B. Biggers, former director of the Division of Production, has been sent to London as Minister.

The Division of Civilian Supply will initiate the plans and programs for civilian allocation, to be submitted for approval to the newly created Supply Priorities and Allocations Board.

Price fixing will remain in the Office of Price Administration, new name of the Office of Price Administration and Civilian Supply, for the functions of civilian allocation have been transferred to the above OPM division. The various industry committees in OPM and OPACS have been consolidated so that all questions of priorities, allocation, and production will have one unified contact with the government.

Then on September 4 the President established a Division of Contract Distribution, with Floyd B. Odlum director. The program of this division embraces: breaking down large orders into smaller units and seeing that purchases are spread among more companies throughout the nation; expanding sub-contracting, pooling plant facilities, and converting civilian plants for defense contracts; providing a staff of industrial and production engineers to form and execute plans for the conversion of non-defense industries and plants; provide assistance through the Labor Division in retraining and obtaining employment for unemployed workers. This new division replaces the Defense Contract Service, established July 29.

Rubber and Rubber Products Branch

Mr. Knudsen on September 10 assigned 28 industrial branches among the Divisions of Production, Purchases, Civilian Supply, and Materials. These branches correspond to the old commodity sections as the operating units under which the various industry committees function. The Rubber and Rubber Products Branch is under the Division of Civilian Supply.

Head of this new branch is Barton Murray, retired economist formerly with the NRA. Harry S. Rogers, chief of the replaced commodity Section 1, which covered rubber, synthetic rubber, and cork, and W. L. Finger, his assistant, both have resigned from the OPM.

Rubber Labor Committee

Mr. Hillman on September 7 revealed that at a joint meeting of the OPM Rubber Labor Advisory Committee and a labor sub-committee of the Rubber Industry Advisory Committee a plan was proposed to make more flexible the distribution of raw rubber among plants of companies having more than one establishment, and the plan also assures labor that an equitable supply of rubber to all plants will prevent labor standards from being undermined in any community. The plan was designed to find means whereby existing priorities on rubber may be applied to cushion the impact of the reduction in rubber processing on the 150,000 employes in the industry. Questions arising from the redistribution of rubber by a firm among its branches will be submitted to a joint conference of local union representatives, the management, and the OPM Regional Labor Supply Committee. Where the plant has no union, the last two named and a third person mutually agreeable will discuss the question.

Members of the sub-committee on labor problems of the Rubber Industry Advisory Committee follow: Fred W. Climer, personnel director, Goodyear Tire & Rubber Co.; H. B. Spencer, assistant director of industrial and public relations, United States Rubber Co.; Harold B. Leland, Hood Rubber Co., Inc.; J. H. Matthews, assistant factory manager, Raybestos-Manhattan, Inc.; and J. F. Joseph, president, Cincinnati Rubber Mfg. Co.

Waste Materials Industry

On September 3 the OPM urged the billion-dollar waste materials industry to up its collections 20% to insure an adequate supply of materials to defense plants and to relieve shortages facing less essential industries. At the same meeting, attended by 80 representatives of the various branches of the industry, nominations were made for an industry advisory committee to work with defense officials on ways to increase the supply of available waste materials. Three men from each of the six divisions of the waste industry were appointed to the committee. Those representing rubber follow: Edward B. Friedlander, president, Lowenthal Co.; Herman Muehlstein, president, H. Muehlstein & Co., Inc.; and Irwin M. Desser, owner of Desser Tire & Rubber Co.

Mr. Henderson, in his appeal for increased collections, also requested cooperation in maintaining a stable price level and warned that in case a price schedule became necessary, those deviating from it would be held "to strict accountability."

Automobile and Truck Program

A new program designed to facilitate production of heavy motor trucks, medium trucks, and truck trailers vitally needed for the transportation of heavy industrial and armament materials was issued September 14 by the Priorities Division. The plan also facilitates production of certain passenger carriers and necessary replacement parts. The new program amends and simplifies administration of the motor truck order originally announced August 30. The new order does not make any major changes in the plan, but alters the methods set up to enforce and administer the order. Two separate orders are involved. One, Limitation Order L-1-a, includes specific instructions as to the number and kind of trucks and allied products which can be made during the period September 1-November 30. The other order is Limited Preference Rating Order P-54, which extends a rating of A-3 that can be used to get the material going into the truck production to the extent provided.

The assistance being extended to truck manufacturers is based on indications that 1,189,000 trucks, approximately 200,000 more than the output of the 1941 model year, will be required during the new model year that began August 1.

The OPM on September 15 decreed production of passenger cars in December to be 48.4% under the December, 1940, output, or 204,848 cars, against 396,823. Thus automobile production for the first five months of the 1942 season will be reduced on an average of 32.2%, to 1,023,217 cars, compared with 1,510,167 in the similar period of the 1941 model year. In this effort to conserve materials for defense, further curtailment of automobile output is anticipated.

At the same time another OPM order was released cutting production of light trucks, of less than 1½ tons, for non-military purposes, 9% for the August-November period, to result in 87,000 light trucks for civilian use, against 96,000 a year ago.

For Simplification of Bicycles

In asking bicycle manufacturers voluntarily to conserve materials and manpower for national defense by simplification of design, substitution of materials, and a reduction of the number of models, the Conservation Bureau, in its first industry-wide request, submitted to 11 bicycle makers several measures, including the substitution of reclaimed rubber for raw rubber whenever possible, and the elimination of white sidewall tires.

Assistance for Repair Work

A new plan granting priority assistance for repair work, which provides machinery giving priority status to repair work in 20 industrial classifications, was announced September 9 by Mr. Nelson. Qualified producers or suppliers may apply a preference rating of A-10 to deliveries of necessary repair parts by endorsing a special statement on purchase orders, certifying that the material ordered is for repair work under the terms of the order, P-22. Included in the twenty industries is "rubber and rubber products, including plants engaged in the production of rubber and rubber products, including reclaimed and synthetic rubber." An interpretation of the law announced September 15 by Mr. Nelson said that in the case of an organization having more than one plant including one or more that does not fall in the classification of essential industries which may use the repair plan, the special preference rating may be used to obtain repair materials only in

(*Continued on page* 90)

EASTERN AND SOUTHERN

U. S. Rubber Breaks Ground at Naugatuck for Synthetic Rubber Plant

Watching the Ground Breaking Ceremonies at Naugatuck

Foreground, Left to Right: John P. Coe, F. B. Davis, Jr., Kenneth Goodyear, and J. L. Murphy; Second Row, Left to Right: George A. Graham, M. G. Shepard, Willis A. Gibbons, George M. Tisdale, Warden Leo J. Brophy of Naugatuck, Harry S. Marlor, Eric Burkman, George F. Hichborn, Elmer Roberts, Ludwig Muser, J. C. H. Wendes, and John E. Caskey

Near the site of the shop in Naugatuck, Conn., where Charles Goodyear over a century ago first demonstrated commercially his process of vulcanization, ground was broken September 8 by United States Rubber Co., 1230 Sixth Ave., New York, N. Y., for New England's first plant to make synthetic rubber. With an annual capacity already increased to 10,000 tons, four times the original amount, and with provision for further expansion as required, the plant is being built under an agreement of lease between the rubber company and the Defense Plant Corp., which is financing construction, with the company in charge of operations. It is expected that the plant will start to function within a year manufacturing the butadiene-styrene copolymer type of synthetic, which is used in Germany for tire production. It is understood that the plant will handle the polymerization of raw materials which will be made available by the government.

F. B. Davis, Jr., president of U. S. Rubber and principal speaker at the ceremonies, and Kenneth Goodyear, descendant of the inventor's family turned the first spade of earth. Mr. Goodyear is an industrial engineer at Naugatuck in U. S. Rubber's footwear plant, which has grown out of the original factory established by his illustrious ancestor. Other company executives present for the affair included: John P. Coe, under whose guidance the plant will be operated, who is also general manager of the company's Naugatuck Chemical Division and was one of the speakers; Elmer Roberts, vice president of U. S. Rubber; Eric Burkman, secretary; Willis A. Gibbons, director of general development; George M. Tisdale, director of purchases; Harry S. Marlor, general manager, footwear division; George Hichborn, traffic manager; John E. Caskey, assistant general manager, Naugatuck Chemical; George A. Graham, chief engineer; M. G. Shepard and J. C. H. Wendes, development engineers; Philip E. Rice, factory manager; Don L. McCollum, general superintendent; Ludwig Muser, technical supervisor, synthetic rubber development; and J. L. Murphy, of Defense Plant Corp.

Making Life Boats and Balloons at Woonsocket

U. S. Rubber on September 23 reopened its former footwear plant at Woonsocket, R. I., for the production of barrage balloons for the Army and life boats for the Navy. The balloons, 76 by 28 feet, with a capacity of about 30,000 cubic feet, are designed to float at an altitude of 5,000 to 10,000 feet and to ride a heavy gale with an anchor cable of $\frac{1}{16}$-inch diameter. The boats, of rubber cemented cloth colored orange for greater visibility, will hold two, four, or seven men. Also planned is a special one-man raft for aviators that can be opened and inflated by a parachutist by means of a rip-cord.

Workers at the plant, 70% of whom are women, had been taken previously from Woonsocket to U. S. Rubber's Naugatuck, Conn., plant for training. They will act as instructors and supervisors as the company hires additional employes.

New Products

A new line of Fisk batteries, consisting of three branded grades and a low-priced battery made in the two most popular sizes, and a new Federal battery line to carry the trade name "Blue Pennant", also consisting of three branded grades and a low-priced battery in the two most popular sizes, are announced by U. S. Rubber.

The "Blue Pennant" battery line, consisting of three branded grades plus a low-priced (Spur) battery made in the two most popular sizes, is announced by the Jobber Tire Sales Division of U. S. Rubber for Gillette tire jobbers. A six-battery merchandiser, a fast charger, and a full line of dealer helps will be available.

An air hose weighing 20 pounds per 100 feet, claimed to be able to halve the load carried by workers handling pneumatic tools, is manufactured by U. S. Rubber. Particularly designed for tight quarters encountered in ship-building and ship repair, the hose is made with $\frac{1}{8}$-inch thick oil-resisting rubber tube, one ply of specially braided lightweight yarn, and a $\frac{1}{8}$-inch abrasion cover.

The "U. S. Royal", a heavy-duty tire tube reportedly resistant to heat at high speeds and protected from pinching, abrasion, rust, and corrosion at the rim side by a heavy laminated two-ply base, was announced by U. S. Rubber. The tube is in two colors, red with a purple base.

A perforated riding rib, known as Perma-Grip, has been added to the Gillete Ambassador tire, according to U. S. Rubber. The small perforations in the new rib are closely spaced and, together with the spiral traction design in the center of the tire, are said to make possible a firmer grip on slippery pavements.

Norton Advanced

Mr. Marlor recently announced the appointment of Walter H. Norton, factory manager at the Naugatuck plant, as production manager of the footwear division.

The Federal Reserve Bank of New York in a recent survey of the net profits for the first half of 1941 of 511 industrial and mercantile corporations included rubber and tire companies in the group showing the largest gains as compared with previous years. For the 1941 period the net profit for these companies was $25,000,000, against $12,700,000 in the 1940 period, $2,700,000 in 1938, and $21,500,000 in 1937.

Vulcanized Rubber Co., Morrisville, Pa., operating with three shifts in most departments, reports being behind on many orders and having enough work to keep the factory busy for some months.

The Office of Export Control was absorbed by the Economic Defense Board on September 17. The new export control functions of the board will be assumed by Milo Perkins.

Titanium Deposits Acquired

The Titanium Division of the National Lead Co., 111 Broadway, N. Y., has purchased property in Essex County, N. Y., from the MacIntyre Iron Co., at the instigation of the Navy Department and the Office of Production Management. Negotiations for purchase were completed on September 10 when the Titanium Division acquired title to the land.

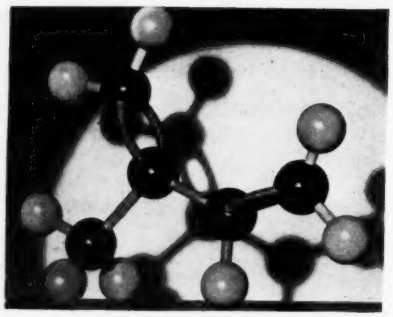
The deposits in this property consist of magnetite with a high titanium content which will be concentrated to an ilmenite containing approximately 50% iron and 50% titanium. It is reported that the deposits are ample to satisfy the raw material requirements of all present manufacturers of titanium pigments for a period of not less than 10 years. Operations at the new location are expected to begin by next May, and the deposits will be used as a source of ilmenite for the operation of the Titanium Division's two pigment plants at St. Louis, Mo., and Sayreville, N. J., as well as the plants of other manufacturers who may wish to draw from this source of supply. The bulk of this country's ilmenite requirements has been imported from abroad, chiefly India.

Premium Show

With a registered attendance of 1,200 persons, the Seventh Annual Atlantic Coast Premium Buyers' Exposition, was held at the Commodore Hotel, New York, N. Y., September 8 to 12, under the auspices of Premium Advertising Association of America, Inc., New York. At the show the booth of the Barr Rubber Products Co., Sandusky, O., displayed multi-colored rubber balloons which largely were designed for children, although many were of patriotic designs; the booth also exhibited rubber balls of various sizes, designs, and colors, and rubber toys for dogs. Balloons were also exhibited by the Pioneer Rubber Co., Willard, O., including a doll balloon with movable eyes. Among the products on display by Stern Novelties Mfg. Co., Inc., New York, N. Y., was a pocket-size sewing kit made of a material which was described as paper rubberized on both sides.

United Carbon Co. on September 1 moved its Charleston, W. Va., office to the newly completed United Carbon Bldg. on Kanawha Blvd. at Broad St., Charleston.

The Tyson Corp., manufacturer of rubber substitutes, Woodbridge, N. J., recently saw one of its manufacturing buildings destroyed in a storm, but the loss was covered by insurance. As the buildings where finished goods are stored were not damaged, the firm was able to fill orders without delay. The destroyed structure was replaced last month, and operations resumed. The corporation, of which Thomas H. Tyson is president, was formed in 1936 when it purchased all the assets from the receiver of The Tyson Bros., Inc.



"Molly Q" is the name given to this model of the isoprene molecule by the Aldan Rubber Co., Philadelphia, Pa., which has used the gadget for sales promotion purposes.

Elasticized Kidskin Shoes

Alfred Vamos, inventor of shoes made stretchable with "Lastex" yarn, has perfected a method by which smooth kidskin is now added to the growing list of leathers and other materials available for stretchable shoes. There were very special problems to be solved in connection with the elasticizing of smooth kid. This relatively delicate shoe leather would wrinkle, or have its surface otherwise distorted if laminated with "Lastex" backing in the same way as the coarser grain leathers or suede. Special methods of tanning had to be worked out in order to obtain skins which would have the desired stretch without distortion. This fall, after more than three years' experimenting, saw Mr. Vamos' effort successful, and stretchable smooth kid shoes are now being produced by leading manufacturers throughout the country.

Mr. Vamos estimates that last year thirty million pairs of stretchable women's shoes were marketed, and he claims that that figure will be doubled this year. There are more than four hundred manufacturers applying the stretchable idea to practically every type of women's footwear.

In 1939 an agreement was arranged between manufacturers licensed by the United States Rubber Co. to make "Lastex" shoe materials and the firm of Alfred Vamos, 47 W. 34th St., New York, N. Y., whereby the latter was appointed a distributer of these materials and agreed to turn his patent rights over to the United States Rubber Co.

L. Albert & Son, rubber machinery dealer, is operating to capacity at its plants in Trenton, N. J., Akron, O., and Los Angeles, Calif. I. H. Albert, president, has returned to Trenton from Los Angeles. Philip E. Albert, vice president, is now on a lengthy business trip to the Pacific Coast branch.

Thermoid Co., Trenton, N. J., and its domestic subsidiaries reported August sales at $925,770, contrasted with $778,384 in August, 1940. Sales for the first eight months this year totaled $7,390,867, against $5,568,703 last year.

Tensolite Corp. Forms Subsidiary

Tensylon, Inc., a subsidiary of The Tensolite Corp., North Tarrytown, N.Y., manufacturer of tensilized rubber hydrochloride, has been formed and sublicensed to make and sell round plastic yarn, either solid or covered, except covered wire and rubber. The subsidiary, a New York corporation, has its office and mill at Eldred, N. Y. It is also licensed to sell Crille, the crushed yarn product of The Tensolite Corp. The latter corporation will discontinue the manufacture of products to be made by Tensylon, Inc., and will concentrate on development and commercialization of its Tuff-Tie ribbons, lacings, covered wire, fine filaments (over 5,000 yards to the pound), fine tubes, bristles, and Florafilm decorative materials. The officers of the new company include: Henry D. Minich, chairman of the board; H. C. Tiffany, president; Edward I. Devlin, Jr., vice president and treasurer; Forrest W. Wilson, secretary; Marie E. Cummings, assistant secretary; and Elfriede K. Devlin, assistant treasurer.

Walter Dutton Retires

Walter Dutton, after serving as secretary of Commodity Exchange, Inc., since its inception on May 1, 1933, retired on September 30. Mr. Dutton had been secretary of the Rubber Exchange of New York from 1926 to 1933, and had been secretary and assistant treasurer of the Continental Rubber Co., New York, from 1907 to 1914. A resolution expressing the high regard in which Mr. Dutton was held by the board of governors, the officers, and the members of the exchange was passed at the September meeting of the board of governors.

American Firstoline Corp., manufacturer, distributer, and exporter of a complete line of chemicals and pigments, especially French process zinc oxides, zinc carbonate, copper sulphates, nickel sulphate, etc., as well as non-ferrous metals and alloys, according to President Alan A. Lubitz, has moved its sales and export offices from 10-35—45th Ave., Long Island City, N. Y., to 420 Lexington Ave., New York, N. Y. Laboratory and storage facilities will continue to be maintained at the Long Island City address, where expansion of these facilities is under way. American Firstoline Corp. is also acting as sole sales agent for the Gulton line of non-ferrous metals, alloys, and bearing metals.

Martindell Molding Co., Ewing Township, Trenton, N. J., had to cease production of certain goods because of lack of material. The company recently completed a new addition and is awaiting the arrival of molding machines.

Puritan Rubber Co., Trenton, N. J., has hired many extra employes to take care of increased business. Factory Manager James P. Flynn vacationed with his family in New Hampshire.

Cameron Machine Co., manufacturer of slitting and roll winding machines, rewinders, and winders, 61 Poplar St., Brooklyn, N. Y., according to Advertising Manager H. E. Overacker, plans a $100,000 extension to its large assembly floor to meet the unprecedented demand for Cameron machines.

Hohwieler Rubber Co., Morrisville, Pa., is very busy on defense orders, mostly for molded goods. President William Hohwieler expects the plant to be busy during the fall.

Bruce Bedford, president, Luzerne Rubber Co., Trenton, N. J., and Mrs. Bedford have been cruising along the Chesapeake Bay.

Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., according to Factory Manager Chas. T. Young, has named T. E. Conklin traffic manager to succeed H. S. Sturges, who died June 27 after 33 years with the company. Appointed to Mr. Conklin's former post of assistant traffic manager was W. H. McKean.

Martin Rubber Co., Long Branch, N. J., according to President Walter Tepper, is working three shifts 24 hours a day, with more than 35% of its production based on defense orders. If the additional equipment which has been ordered, but not yet delivered, were on hand, the firm would increase the number of employes.

The Rubber Manufacturers Association of New Jersey, because of the pressure of business, postponed its annual outing this year. The annual meeting will be held in December.

National Independent, 250 W. 57th St., New York, N. Y., is a new monthly for tire dealers that began publication in May. George J. Burger is publisher, and George J. Burger, Jr., is managing editor.

John A. Roebling's Sons Co., manufacturer of wire and wire rope, insulated wire and cables, and wire cloth and netting, Trenton, N. J., on September 19 celebrated its one hundredth anniversary. A dinner was held at Nassau Tavern, Princeton, N. J., at which the principal speakers were Wm. A. Anderson, company president, Charles G. Williams, executive vice president, and Price Administrator Leon Henderson. Robert T. Bowman, public relations director for the Roebling company, was toastmaster.

Crescent Insulated Wire & Cable Co., Trenton, N. J., had to lay off nearly 300 employes during August and September because of inability to secure enough rubber and copper. C. Edward Murray, Jr., vice president, who returned from Washington, said it was impossible to secure enough raw materials to fill the many defense orders and that when conditions improved, the men would be given their old jobs.

Thomas Midgley, Jr., chairman of the American Chemical Society's board of directors and vice president of the Ethyl Gasoline Corp., was awarded the Priestley Medal, highest honor bestowed by the A. C. S., at its recent meeting in Atlantic City, N. J.

Thermoid Co., Trenton, N. J., held a four-day conference at the plant beginning September 8, with sales representatives present from all parts of the United States. Sales policies, general merchandising, and plans for the coming year were outlined. Thermoid is running to capacity with different shifts.

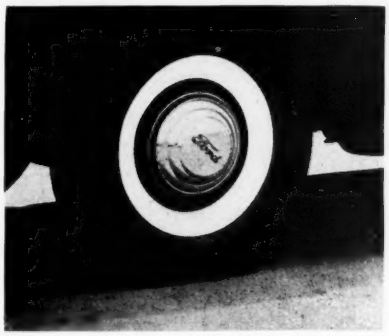
Jos. Stokes Rubber Co., Trenton, N. J., running with three shifts, reports an increase in defense orders.

OHIO

General Tire Developments

The General Tire & Rubber Co., Akron, following the banning of white sidewall tires, last month announced a new invention, "Spats", or metal sidewall trim rings for tires. These white spring steel rings will not scuff against curbs, for they are set back from the bulge of the tire so that the black sidewall takes the blows. "Spats", it is claimed, protect the wheels from salt water, and the rims from dirt and gravel; they cover attractively wheel balancing weights; and they are said to outlast several sets of tires and cannot be damaged, even though the tire runs flat. A whisk of a cloth cleans these rings. They are made in sizes to fit all popular 15- and 16-inch wheels.

Last month General Tire announced a new treatment for handling the store-planning service it originated in October, 1937. Under the new arrangement, to be operated from Akron under the direction of C. Dean Lampman, merchandising display expert, a staff will be maintained in the Rubber City at all times to serve any General Tire distributer who wishes consultation on arrangement of his salesroom or any individual problems of display merchandising.



Tire Equipped with "Spats"

The Timken Roller Bearing Co., Canton, has begun construction of a new cage building, to cost $200,000 without equipment, where all Timken roller bearing cages will be made upon its completion. The new $500,000 power plant being installed at the Canton plant will be in operation around the first of the new year. The company now employs more than 15,000 workers in its plants at Canton, Gambrinus, Mt. Vernon, Wooster, and Columbus, and a large part of its production is going into the defense program.

Seiberling Rubber Co., Akron, held a series of branch sales conferences from August 22 to 29 at which three company representatives, R. D. Wallace, related lines sales manager, L. M. Seiberling, commercial sales manager, and N. E. Malone, advertising manager, told salesmen in the company's nationwide branches of new sales campaigns for batteries, heaters, spark plugs, and auto mats. Among other company executives present were: J. L. Cochrun, vice president in charge of sales; G. N. Kinkead, Akron branch manager; Douglas Mueller, public relations; A. V. DeFosset and C. Lee Wolf, of the advertising department; S. G. Olling, Akron branch office manager; E. R. Gibson, sales statistics; Ralph Lottes, related lines; E. E. Truslow, battery consultant; and W. P. Seiberling, Sealed-Air Tube sales manager. Colonel Cochrun last month addressed the Barberton Rotary Club.

Hycar Chemical Co., formerly Hydrocarbon Chemical & Rubber Co., Akron, according to President Ross W. Thomas, on September 19 signed a contract with the Defense Plant Corp., Washington, D. C., for the construction of a new plant at Louisville, Ky., for making synthetic rubber. Under the terms of the contract $2,750,000 is made available for the construction and operation of the plant with a capacity of 10,000 long tons annually. Mr. Thomas further stated that Hycar's Akron plant is being enlarged and will soon also produce the synthetic at the rate of 7,000 tons a year. The company is jointly owned by The B. F. Goodrich Co. and Phillips Petroleum Co.

The Toledo Industrial Rubber Co., Toledo, has increased its laboratory facilities, and the department is under the supervision of Technical Superintendent A. W. Oakleaf. Testing equipment, according to General Manager A. R. Nazar, is amply sufficient for production control and development to automotive and government specifications.

The Association of American Battery Manufacturers, Inc., 2706 First-Central Tower, Akron, O., has issued a revised wall chart which gives briefly and simply approved methods for diagnosing and correcting customers' battery troubles by hydrometer and voltmeter tests. The Association will hold its annual convention October 30 and 31 at the Palmer House, Chicago, Ill.

Goodyear Designed Strato-Sentinel, Gigantic Barrage Balloon Capable of Ascent to 15,000 Feet

Goodyear Executive Changes

The executive staff, taken from personnel of Goodyear's plants in Akron, as a nucleus around which the Goodyear Aircraft Corp.'s organization, to operate its air parts plant in Litchfield Park, Ariz., will be formed, was announced September 16 by P. W. Litchfield, president of the corporation and chairman of the board of the Goodyear Tire & Rubber Co. Executives of the Arizona organization are: R. A. Hudson, general superintendent; Earl R. Gilleland, production superintendent; R. P. Gaylord, chief engineer; R. C. Hoff, manager of production planning; W. T. Davis, personnel manager; I. S. Gharky, purchasing agent; Murrell Hall, representing comptroller and treasury departments; Tom Penn, chief inspector; J. L. Berry, tools, dies, and jig design; W. A. Steyer, design and stress analysis; P. L. Keller, manager production control; K. T. Edwards, manager materials division; E. C. Retzler, foreman subassembly, final assembly; A. R. Heisel, foreman sheet metal fabrications; B. C. White, foreman machine shop; J. C. Nees, foreman jigs, construction, and erection; B. Tripplett, receiving inspection; D. R. White, general accounting; F. E. Bergstreser, cashier; H. J. Bliss, cost accounting.

Clark Sorensen, in personnel, sales, and allied fields since he joined Goodrich in 1936, has been named employment manager of The Lone Star Defense Corp., Goodrich subsidiary at Texarkana, Tex., it is announced by A. C. Sprague, superintendent of personnel of the defense company.

H. L. Powell, according to J. M. Linforth, Goodyear vice president in charge of automotive original equipment sales, has been named manufacturers' representative in the Milwaukee, Wis., area, succeeding E. M. Eichmann, now associated with the Goodyear Aircraft in Akron. Mr. Powell joined the company in 1934 and since September, 1940, had been staff man for the truck and tractor tire department at Akron.

Goodyear is erecting a $450,000 addition to its Pliofilm factory at St. Marys. The new building should be completed by January 1, but installation of machinery may be delayed because of priorities on defense materials. Only a small number of additional workers will be taken on when operations begin.

Goodrich Developments

Two new batteries of glass mat construction which have been added to the Glasstex line of The B. F. Goodrich Co., Akron, feature a new non-flood device utilizing a rubber bellows which expands and traps air when the vent cap of the battery is removed. In diesel-starting and bus batteries, microporous rubber separators are used in addition to the glass retainer mats.

Printers are currently using Ameripol synthetic printing and engraving rubbers in place of copper in preparing electrotypes, according to Goodrich. Copper has been placed on the basis of mandatory priority because of the defense emergency, and supplies for civilian uses are limited.

The heat-resisting qualities of the Goodrich standard V-belts are reportedly increased as a result of research so that they now are fully equal to the special black heat-resisting belts and may be used at temperatures above 130° F. The special black heat-resisting belts are no longer manufactured for this reason.

A Goodrich conveyer belt designed for coke wharf service is constructed with a double thickness of cover over the areas of greatest wear on both the top and bottom of the belt. Consequently additional service may be obtained from the bottom side when the top side is worn down by abrasion by simply turning the belt over.

An unusual contribution which rubber is making toward national defense, as reported by Goodrich, is a special vacuum hose used in a large airplane plant to suck up and carry away any loose bolts, nuts, or shavings that may be in the hulls of bombers after their completion. Because the hose is subject to much bending through various parts of the ship's hull, it is light and flexible, with a smooth bore.

Engineer of the Firestone Tire & Rubber Co. has inflated this small Static Conductor tire for hospital service and applied the load it will carry in service, preparatory to testing its electrical conductance

George H. Conrad, Who Built the First Pneumatic Clincher Tire in America, on a Recent Visit to the Goodrich Plant Demonstrated How He "Stitched" down the Tread on the Original Clincher More than 40 Years Ago

A rubber hose intended for cleaning tubes of stills used in refineries of petroleum, chemical, and other industries is now being manufactured by Goodrich. The hose is of rough bore construction with synthetic frictioned fabric and synthetic oil resisting tube, asbestos cover, and both internal and external wire winding. It is reportedly suitable for use with air up to 125 pounds pressure or with steam up to 80 pounds pressure.

President John L. Collyer has announced a plan by which Goodrich employes may invest in Defense Savings Bonds, paying for them in installments by voluntary payroll deductions.

Firestone Tire & Rubber Co., Akron, has named Henry S. Brainard, noted Cleveland lawyer, assistant counsel of the company, succeeding John H. Joss, resigned.

Report on Guayule Legislation

Congressman John Z. Anderson, of California, recently announced to members of the Salinas Valley National Defense Committee to Promote the Production of Guayule Rubber, Salinas, Calif., that the bill which he recently introduced in the House, which provides for the planting of 45,000 acres of guayule shrub in the United States, is progressing satisfactorily. Administration leaders are lending whole-hearted support, Mr. Anderson stated further. Fred J. Hart, vice chairman of the committee, left for Washington to confer with congressmen and senators who are interested in the legislation.

MIDWEST

Safety Congress and Exhibition

National Safety Council, Inc., Chicago, Ill., will hold its Thirtieth National Safety Congress and Exposition at the Stevens Hotel, Chicago, October 6 to 10. The program for the Rubber Section, scheduled for October 6 and 7, follows:

Report of Sectional Activities by General Chairman O. Hopkins, United States Rubber Co., Providence, R. I., followed by an address by a speaker to be announced. Plant Problems (Panel Discussion), with W. L. Schneider, B. F. Goodrich Co., Akron, O., presiding, and consisting of: "Training Roll Release Emergency Crews", J. M. Kerrigan, U. S. Rubber Reclaiming Co., Inc., Buffalo, N. Y.; "Handling Equipment: Hose Mandrels, Molds, Small Hand Tools, Portable Electrical Equipment", R. A. Bullock, Corduroy Rubber Co., Grand Rapids, Mich.; "Hazards of Unfired Pressure Vessels", L. P. Gove, Mutual Boiler Insurance Co., Boston, Mass.; "Training New Employes in Safety", U. L. Moler, Inland Division, General Motors Corp., Dayton, O.; "Highway Transportation Problems", A. W. Meinke, Indemnity Insurance Co. of North America, Philadelphia, Pa.; and "How Safety Shoes Are Sold in the Plant", J. E. Lovas, U. S. Rubber, Passaic, N. J.

The Tuesday morning session will begin with election of officers, followed by a report and presentation of awards of the Rubber Section Safety Contest of 1940-41. Then a speaker will address the audience on a subject not yet announced. The opening paper Tuesday afternoon will be "Muzzle That Bite", by E. W. Beck, U. S. Rubber, New York, N. Y., and then will come a discussion led by W. H. MacKay, Dunlop Tire & Rubber Corp., Buffalo. "How Fires Start in Industry", a colored motion picture, will be presented and discussed by F. J. Emmons, Associated Factory Mutual Fire Insurance Cos., Chicago, followed by two 15-minute talks on handling solvents: "Health Hazards", J. N. Shirley, Arrow Mutual Liability Insurance Co., Newton, Mass., and "Accident Hazards", P. W. Gumaer, Barrett Co., Edgewater, N. J. A general discussion will close the program.

At the sessions of the Automotive & Machine Shop Section, October 6-7, A. C. Horrocks, Goodyear Tire & Rubber Co., Akron, will discuss "Placing Them Right. (Dividends from the Careful Selection of Men for Jobs for Which They Are Physically Fitted.)"; and M. A. Clark, U. S. Rubber, Detroit, Mich., will talk on "Using Safety as an Approach to Good Employe Relations."

H. L. Miner, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., will preside at the sessions of the Chemical Section on October 8.

Among the firms listed for participation in the exhibition are: Bauer & Black, Chicago; Cambridge Rubber Co., Cambridge, Mass.; Davis Emergency Equipment Co., Inc., New York; du Pont; Franklin Research Co., Philadelphia; Lima Cord Sole & Heel Co., Lima, O.; Mine Safety Appliances Co., Pittsburgh, Pa.; Minnesota Mining & Mfg. Co., St. Paul, Minn.; and Panther-Panco Rubber Co., Chelsea, Mass.

Egloff on Synthetic Rubber

Mass production of synthetic rubber from petroleum in plants financed by the government was urged by Gustav Egloff, director of research for Universal Oil Products Co., Chicago, Ill., in an address delivered to the thirty-ninth annual meeting of the National Petroleum Association, Atlantic City, N. J., September 17. Dr. Egloff declared that 1,000,000 tons of petroleum rubber could be produced annually by using an immediate federal appropriation of $500,000,000 to build the necessary plants; it was added that 18 months would be required to build the plants. Although normal rubber consumption is 600,000 tons annually, Dr. Egloff said that defense needs had increased the demand to 1,000,000 tons annually.

New Firm Manufactures Protective Coatings

Protective Coatings, Inc., Detroit, Mich., is a newly established firm engaged in the manufacture of products designed for the safeguard and preservation of materials used in manufacturing. Known as the Tocol line, the products include rubber insulation materials and more than 35 other products for protecting building structures, metals used in production, and other materials from weathering, corrosive chemicals, and other destructive agents. The products include Aquanil, a non-oxidizing waterproofing material for concrete, stone, wood, brick, and metals; Deox, a metal conditioner reportedly suitable for all metals; Helfyr, which is claimed to resist temperatures as high as 3000° F. and is used principally for refractory linings; and Volcazite, which is said to protect metals from corrosion.

The new company is headed by H. Tom Collord, who is founder of Collord, Inc., which produces rubberized production parts for the automobile industry, and is also founder and president of Paramount Rubber Service, Inc., rubber insulating service organization.

Thirty-three rubber firms in the Midwest recently paid 22,608 employes $765,000 in wages, a gain of 0.1% in workers, but a decline of 2.6% in payments against the previous month.

Monsanto Chemical Co., St. Louis, Mo., according to Vice President G. Lee Camp, has promoted Arthur P. Kroeger from assistant general branch manager of the Los Angeles, Calif., office, to assistant manager of sales in charge of intermediates, with headquarters in St. Louis. His successor at Los Angeles is Charles L. Fetzner from the San Francisco office. From 1929 to 1935 Mr. Kroeger had been associated with the company's Rubber Service Department.

Ward Plastic & Rubber Co. recently moved from 1037 Hilton Rd. Ferndale, Mich., to larger quarters at 700 Woodward, Rochester, Mich. The firm specializes in both injection and compression methods of plastics molding, catering to manufacturers, and also makes a line of novelty goods. The company, which is very busy at present, employs between 50 to 65 workers.

NEW ENGLAND

Farrel Executive Retires

Lawrence K. Blackman, assistant treasurer of Farrel-Birmingham, Inc., Buffalo, N. Y., retired from active service on September 1 after 43 years of continuous service, having entered the concern in 1898 as a bookkeeper in its Ansonia, Conn., office. After 21 years with that office, Mr. Blackman was transferred to Buffalo when the plant there was started in 1920, and remained there in charge of general accounting until 1930 when he was elected to the post of assistant treasurer.

The Waterbury Button Co., Waterbury, Conn., is making electrical plugs in which the contact with flexible wire is made without the necessity of stripping the insulation. Contact in these Handy Plugs is made through metal teeth that are forced through the insulation when the cap is screwed on; the live ends of the wire are safely tucked away in two small holes in front of the teeth. The new attachment plug, made of bakelite and brass, also features a side outlet that eliminates a protruding loop of wire when plugged in.

Robert C. Kelley, purchasing agent of the Converse Rubber Co., Malden, and of the Hodgman Rubber Co., Framingham, both in Mass., has resigned to become director of purchases, effective October 6, of Basic Magnesium Co., Inc., Las Vegas, Nev.

William L. Pitcher, treasurer of Easthampton Rubber Thread Co. and of United Elastic Corp., both of Easthampton, Mass., recently was honored at a surprise party attended by about 150 of his associates in both organizations in celebration of his 50 years of service. He was presented with a suitably engraved mounted telescope.

The Elm City Rubber Co., manufacturer of rubber specialties, New Haven, Conn., according to President Robert M. Blake, has elected Frederic C. Bennetto, Jr., vice president to succeed the late Baskerville Y. McLemore.

CANADA

Government Control of Rubber

Accumulation of a reserve of 50,000 long tons of crude rubber by April 1, 1942, is the objective for Fairmont Co., Ltd., government owned organization, in a recent order-in-council, which is in conformity with recommendations of the Controller of Supplies, A. S. Williamson, who last month announced a 30% reduction in civilian consumption of rubber. Sole right to buy or import rubber is now vested in the company, and it will allot available supplies to processors according to instructions from the Controller of Supplies. Prices to processors will be fixed by the company with the approval of the Controller, the Wartime Industries Board, and the Wartime Prices and Trade Board. Previous engagements between Fairmont and the rubber companies and between Fairmont and the International Rubber Regulation Committee are cancelled by the new order.

Fairmont, which was set up last October to handle crude rubber supplies in Canada to maintain a constant source of supply for war purposes, has been instructed to attain the 50,000-ton reserve by April 1 and to maintain the reserve at that level until further orders. Thus all rubber imports and reserve stocks will be held by the company, and individual rubber firms will have to purchase their supplies from this one source. No limit will be set on supplies for war production, but for civilian use supplies will be curtailed. Each rubber manufacturer will probably be given a free hand in determining how this will affect output.

On September 17, C. D. Howe, Minister of Munitions and Supply, announced the appointment of H. C. Jeffries, president and general manager of Viceroy Mfg. Co., Ltd., Toronto, Ont., and for many years treasurer of the Rubber Association of Canada, as president of Fairmont Co., Ltd., which has moved its offices from Montreal, P. Q., to Toronto in the interests of greater efficiency. Mr. Jeffries succeeds W. A. Eden, vice chairman of Dominion Rubber Co., Ltd., Montreal, who resigned because of pressure of business and inability to transfer to Toronto.

Rubber under Priorities

Allan Williamson, newly appointed controller of supplies in the Department of Munitions and Supply, has been given authority to establish priorities for rubber and silk and set prices at which they may be sold. Under order-in-council, rubber and silk in all their forms are deemed supplies under provisions of the Munitions and Supply Act. By rubber is meant, "rubber in all its forms, including, but without restricting the generality of the foregoing, crude rubber, latex, reclaimed rubber, and synthetic rubber."

Civilian use of rubber had to be restricted to insure an adequate supply for war purposes and also to build up sufficient reserves to take care of any emergency.

The Controller has power to take possession of any supplies or equipment covered by the order-in-council setting up his office. Besides he is authorized to issue licenses to persons making or dealing in supplies and equipment as he sees fit, and fees may be fixed for the issue of such licenses. If such a license is not obtained an order prohibiting making or dealing in supplies and equipment may be issued. The Controller may also regulate the kind, quantity, and quality of supplies to be made or dealt in and to establish quotas.

Civilian Consumption Curtailed

On September 12, Mr. Williamson released an order whereby consumption of crude rubber for civilian purposes will be reduced in Canada to 70% of the monthly average used in the year ended May 31, 1941. The reduction will be gradual, beginning with 10% in October and 5% additional in each following month until the full 30% is effective February 1, 1942. The order requires that all war needs of crude rubber must be supplied first, after which releases will be made to dealers. The surplus, if any, will be placed in storage against future emergencies.

Mr. Williamson said, "Rubber imports into Canada have been sufficient for all requirements, but, because of the shortage of shipping and uncertainty of supplies in the future, it is essential to safeguard the supply and build up stock piles."

A committee will advise the Controller as to the allotments to processors on the restricted basis. The following were appointed to the Rubber Advisory Committee by Mr. Williamson: chairman, James I. Simpson, president, Dunlop Tire & Rubber Goods Co., Ltd.; Wm. H. Funston, president, Firestone Tire & Rubber Co., Ltd.; Paul C. Jones, president, Dominion Rubber Co., Ltd.; Harold C. Jeffries, president and general manager, Viceroy Mfg. Co.; Albert G. Partridge, president, Goodyear Tire & Rubber Co., Ltd.; George W. Sawin, vice president and general manager, B. F. Goodrich Rubber Co. of Canada, Ltd.; and J. Godfrey Smith, vice president, Federal Wire & Cable Co.

Members of the committee agreed to serve only after their appointment had been approved by a meeting attended by all processors of rubber in the Dominion so that they might act on behalf of the industry with its approval. The meeting also approved of the rubber industry cooperating in every possible way in assisting the government in its present program for the conservation of rubber.

All supplies of crude rubber in Canada are under control of the Fairmont Co., which will release the rubber under the direction of the Minister of Munitions, C. D. Howe, on information from the Rubber Advisory Committee.

McGill University Offers Course on Resins and Lastics

An extension course on "Chemistry and Technology of Resins and Lastics" will be offered this fall for the fourth consecutive year by the Department of Chemistry, McGill University, Montreal, P. Q. Starting in mid-October and continuing for 16 weekly lectures, the course will be under the supervision of R. V. V. Nicholls, assistant professor of chemistry and secretary of the Quebec Rubber and Plastics Group. The course is expected to cover the theoretical chemistry and practical technology of synthetic plastics, coating resins, fibers, and rubbers, and is planned especially for industrial chemists, fabricators, and sales promotion men.

National Salvage Office is asking householders to donate to the nearest salvage depot waste rubber around the house, such as auto and cycle tires and tubes, footwear, hose and tubing, wringer rolls, mats, water bags, belting, and gaskets. Goods are not wanted unless they are entirely worn out.

The Department of Munitions & Supply, Ottawa, Ont., recently awarded orders for the following: *aircraft,* Dominion Rubber Co., Ltd., $5,270, Dunlop Tire & Rubber Goods Co., Ltd., $57,578, Firestone Tire & Rubber Co. of Canada, Ltd., $26,575, B. F. Goodrich Rubber Co. of Canada, Ltd., $23,819, Goodyear Tire & Rubber Co. of Canada, Ltd., $15,950; *land transport,* Dominion, $97,443, Dunlop, $191,158, Firestone, $229,217, Goodrich, $59,827, Goodyear, $514,443; *ordnance,* Dunlop, $23,458, Firestone, $31,-104; *personal equipment,* Goodrich, $14,-700, Miner Rubber Co., Ltd., $86,000.

Frank Dowsett, advertising manager, Gutta Percha & Rubber, Ltd., Toronto, recently addressed the Rotary Club of Montreal on the prospect of revolution in Nazi-occupied territories.

Viceroy Mfg. Co., Ltd., Toronto, Ont., has received the approval of Justice Kelly for the acquisition of the Beamsville, Ont., property of Lincoln Rubber Products, Ltd. The Trusts & Guarantee Co., as trustee for bondholders, made the application for a vesting order in the lands, which was granted.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., has appointed J. W. Wright manager of the mechanical rubber goods department, Quebec Division. Mr. Wright for 11 years has been mechanical rubber goods salesman in Montreal, P. Q., where he will have his headquarters.

B. F. Goodrich Rubber Co. of Canada, Ltd., Kitchener, Ont., paid 3½% interest on its 7% cumulative bonds September 1 to bondholders on record August 15. This is the first payment since the 4¾% in 1936. Interest is cumulative to the extent earned, and arrears become payable at maturity of the bonds.

Naugatuck Chemicals, Ltd., Elmira, Ont., has appointed Ralph M. Ferguson sales manager, with headquarters at Elmira. Mr. Ferguson for many years was with the St. Lawrence Chemical Co., which long represented in the Dominion the Naugatuck Chemical Division of the United States Rubber Co., New York, N. Y., U. S. A. Starting October 1, however, the sale of these chemicals will be taken over by Naugatuck Chemicals, Ltd.

E. J. Hayes, of Gutta Percha & Rubber, Ltd., Toronto, Ont., was elected a director of the Industrial Advertisers Association, of Ontario, at the recent annual meeting.

OBITUARY

B. Y. McLemore

A SUDDEN heart attack in his office caused the death, on August 22, of Baskerville Young McLemore, vice president in charge of production at The Elm City Rubber Co., New Haven, Conn. He had joined the company in 1932 as secretary and was made vice president in July, 1940.

Mr. McLemore was born in Greenwood, Miss., December 30, 1906. He attended the University of Kentucky and then the University of Alabama, from which he was graduated in June, 1930, with an engineer's degree. Before coming to New Haven he had been employed by the Continental Cotton Ginning Machine Mfg. Co., Memphis, Tenn.

The deceased belonged to the Meadowbrook Country Club and Phi Sigma Chi.

He leaves a wife, two daughters, and a brother.

Burial took place in Greenwood, August 25.

Harold A. Osborne

AFTER a brief illness Harold Allen Osborne, vice president, general manager, and a director of United Machinery Corp., Boston, Mass., passed away at his home in Swampscott, Mass., September 6. He was also on the board of the Littleway Process Co., United Shoe Repairing Machinery Co., Krippendorf Kalculator Co., Turner Tanning Machine Co., B. B. Chemical Co., and the Campbell Bosworth Machinery Co.

Mr. Osborne was born in Lynn, Mass., November 28, 1886. He attended Lynn Classical High School and Dartmouth College (Class of 1909).

The deceased was a 32nd degree Mason and also belonged to the Boston Chamber of Commerce, and the Tedesco Country, Algonquin, Oxford, and Beach Bluff clubs.

His mother and the widow survive.

Funeral services were held at the Central Congregational Church, Lynn, September 9.

Charles A. Stillman

Charles A. Stillman

FOLLOWING a long illness Charles A. Stillman, since 1926 vice president of The Goodyear Tire & Rubber Co., Akron, O., died at his home there on September 6. The funeral was held September 8 at First Presbyterian Church, with interment in Rose Hill Cemetery. Among the pallbearers were many Goodyear executives.

Mr. Stillman was born in Tuscaloosa, Ala., February 5, 1873, and attended the city schools and the University of Alabama. He began his business career with the iron concern of Louis V. Clark & Co. in Birmingham and next became resident manager for Rogers, Brown & Co. Later followed his appointments, in Chicago, Ill., as vice president of the Iroquois Iron Co. and as president of Rogers-Brown Iron Ore Co.

In 1921, however, Mr. Stillman joined Goodyear as secretary. He organized the Australian, English, Argentine, Swedish, and Brazilian plants of the company as well as the Gadsden, Ala., factory. The deceased was also a director of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., and of Goodyear Tyre & Rubber Co., Ltd., Wolverhampton, England.

Active in civic affairs, Mr. Stillman served on the Akron Chamber of Commerce, Community Chest, the Akron Better Business Bureau, the board of the City Hospital, the YMCA, and the Boy Scouts. He also belonged to the Portage Country and Akron University clubs.

He is survived by his wife, a son, and a daughter.

Robert L. Harmon

ROBERT L. HARMON, former rubber executive, died suddenly September 7 in his garden in Springfield, N. J. The deceased, born in Doylestown, Pa., 59 years ago, once was employed in the purchasing departments of the old Thermoid Rubber Co. and the United & Globe Rubber Mfg. Co., both of Trenton, N. J. Then from 1911 to 1920 he was engaged in sales and advertising work for the Voorhees Rubber Mfg. Co., Jersey City, N. J. The next decade was spent as president of the Industries Publicity Corp., New York, N. Y., and for the past several years Mr. Harmon was president, treasurer, and a director of Evans, Nye & Harmon, Inc., New York.

He is survived by his wife, a daughter, a brother, and a sister.

Burial was in Trenton.

Charles H. Roberts

CHARLES H. ROBERTS, treasurer of Johns-Manville Corp., New York, N. Y., died September 10 of a heart ailment. The funeral was held at his home in Scarsdale, N. Y., September 11, with burial in Trenton, N. J., September 13.

Born on a farm near Doylestown, Pa., May 8, 1890, Mr. Roberts received his secondary education in Trenton, N. J., and attended the University of Pennsylvania until 1907, when he began his business career with J. A. Roebling's Sons Co., as head of the cost department. Later he served in various capacities in the financial departments of the Mercer Automobile Co., Hess-Bright Mfg. Co., United States Rubber Co., Splitdorf Electrical Co., and Julius Kayser & Co., before joining Johns-Manville in 1928.

Mr. Roberts belonged to the Westchester Hills Golf Club, Cobleigh Club, Inc., and the Controllers Institute of America.

He leave his wife, his mother, a sister, and a brother.

FINANCIAL

Unless otherwise stated, the results of operations of the following are after all charges, federal income and excess profits taxes and other deductions. Figures in most cases are subject to audit and final year-end adjustments.

American Zinc, Lead & Smelting Co., Columbus, O., and wholly owned subsidiaries: June quarter: net profit, $165,843, equal, after preferred dividend requirements, to 12¢ each on 673,088 common shares, against $223,452, or 20¢ a common share in the March quarter and $174,040, or 13¢ a common share in the June quarter of 1940. First half, 1941: net profit, $389,296, or 32¢ a common share, against $253,640, or 12¢ a share last year. Year ended June 30, 1941: net profit, $731,961, or 58¢ a common share, against $487,119, or 21¢ a share for the preceding year.

Anaconda Wire & Cable Co., New York, N. Y. First half, 1941: net income, $1,410,519, equal to $3.34 each on 421,981 capital shares, against $497,259, or $1.18 a share, in the first six months of 1940.

Baldwin Rubber Co., Pontiac, Mich.—Year ended June 30, 1941: net income, $611,711, equal to $1.94 each on 315,254 capital shares. Nine months to June 30, 1940, net income, $402,168, or $1.27 on 316,754 capital shares.

Collins & Aikman Corp., Philadelphia, Pa., and subsidiary. Quarter ended May 31: net profit, after provision for normal federal and state income taxes and excess-profits tax, $800,038, equal, after preferred dividends, to $1.33 each on the 562,800 common shares, compared with $741,085, or $1.22¢ a common share, for the quarter ended January 1, 1940; balance of earned surplus on May 31 last, $8,135,243. Results of the Canadian subsidiary were not included.

Dewey & Almy Chemical Co., Cambridge, Mass. First half of 1941: consolidated net profit, $342,838, equal after preferred dividends, to $1.34 each on 217,397 common shares; earnings are after allowing $320,400 for taxes, based on estimated normal federal tax of 30% and an amount expected to meet any liability for excess profits taxes; net profit for the first half of 1940: $272,773, or $1.02 each on 216,475 shares.

Faultless Rubber Co., Ashland, O. Year ended June 30: net income, $128,411, or $1.96 each on 65,450 common shares, against $137,621, or $2.10 a share in the preceding 12 months.

Flintkote Co., New York, N. Y., and subsidiaries. Year ended July 12, 1941: net income, $1,831,344, against $1,443,522 in the preceding 52 weeks; taxes, $856,480, against $393,173; net sales, $23,880,906, against $17,987,592.

Garlock Packing Co., Palmyra, N. Y. First half, 1942: net income, $645,922, equal to $3.08 a common share, against $528,523, or $2.52 a share in the first half last year.

General Cable Corp., New York, N. Y. First half, 1941; net profit, $2,055,223, against $1,495,581 last year. June quarter: net income, $1,049,217, against $768,156 for the corresponding quarter of 1940.

General Electric Co., Schenectady, N. Y. First half, 1941: net profit, $26,003,665, equal to 90¢ each on 28,845,927 common shares, against $25,981,572, or 90¢ a share, in the same period last year; net sales billed, $300,332,085, the record high, against $191,619,132; orders received, $521,138,605, against $212,653,314; provision for federal taxes, approximately $52,000,000, against $19,000,000.

General Motors Corp., Detroit, Mich., and subsidiaries. June quarter, 1941: consolidated net profit, $53,579,568, or $1.18 a common share, against $46,546,999, or $1.02 a share, in the second quarter last year; net sales, $699,898,241, against $461,809,533. First half, 1941: consolidated net profit, $118,177,905, or $2.62 a common share, against $113,575,460, or $2.52 a share; net sales, $1,349,090,860, against $919,960,089.

FROM OUR COLUMNS

Fifty Years Ago—October, 1891

The art of recovering waste has been brought to a particularly high degree of perfection in the rubber business. Today every pound of scrap rubber is saved and has a market value. (p. 5)

Mr. A. B. Jenkins, of Jenkins Bros., New York, N. Y., under date of October 5, 1880, patented the use of diatomaceous silica or infusorial earth, mixed with India rubber and gutta percha, or either, in a vulcanizable compound. (p. 9)

Bolivia proposes to build a railroad 60 miles long to tap the Amazon by a newly explored tributary. (p. 26)

A recently-printed sketch of Daniel Webster mentions that his fee for arguing the great equity cause of Goodyear vs. Day, by which he established the validity of the Goodyear patent, was $5,000. This was his last case. (p. 29)

25 Years Ago—October, 1916

"Keds" is the new name for tennis shoes to be used hereafter by all who make or handle the footwear of the United States Rubber Co. As a bit of word coinage it is clever and original and will go far toward killing the popular but objectionable term of "Sneakers." (p. 2)

United States patent No. 1,195,264, granted to Thomas J. Pennington, Chicago, Ill., describes a reclaiming process in which rubber scrap of different densities is reduced to a pulp in water which is mixed with a heavy oil. Air is admitted to the bottom of the tank causing the particles of low specific gravity to rise to the surface with the oil, while the heavy particles settle. A conveyer skims off the surface layer containing the lighter rubber, and the heavier particles which settle are removed by the same means. (p. 17)

A marked tendency in the compounding of India rubber today is a lessened use of inorganic and an increased use of organic fillers. (p. 29)

Francisco Madero, father of the late President Madero of Mexico, and one of the first to develop the guayule industry, died at his residence in New York, N. Y., September 3, age 67 years. (p. 34)

The German soldier at the front has been doing much good work in collecting waste rubber, as well as other kinds of waste materials. (p. 42)

The London rubber market complains that the Imperial Government, although forbidding the export of rubber from London to America and other neutral countries, allows exporting from Singapore, with the result that Singapore is rapidly becoming the world's rubber mart, while the London market is declining in importance. From the local point of view, this is just as it should be. (p. 43)

Hewitt Rubber Corp., Buffalo, N. Y. First half, 1941: net earnings, $206,774.28, $1.23 a share, against $102,371.03, or 61¢ a share, in the same half last year.

National Rubber Machinery Co., Akron, O. First half, 1941: net profit, $158,849, equal to $1.03 each on 154,000 no-par capital shares, against net loss last year of $3,516.

Raybestos-Manhattan, Inc., Passaic, N. J., and domestic subsidiaries. March quarter: net profit, $573,282, equal to 91¢ each on 628,100 shares of capital stock, against $434,441, or 68¢ a share on 631,200 shares, last year. First half, 1941: net profit, $1,142,973, equal to $1.82 a capital share, against $919,159, or $1.46 a share, in 1940.

Rome Cable Corp., Rome, N. Y. June quarter: net profit, $120,734, equal to 64¢ each on 189,830 capital shares, against $60,570, or 32¢ a share, in the June quarter of 1940; figures are after $162,599 provision for estimated normal and excess profits taxes in 1941 quarter, compared with $11,832, in the 1940 period.

Russell Mfg. Co., Middletown, Conn. Six months to May 31: net income, $153,334, equal to $2.20 each on 69,546 shares, against $71,331, or $1.54 on 46,240 shares, for the six months to May 31, 1940.

Skelly Oil Co., Tulsa, Okla., and subsidiaries. June quarter, 1941: net income, after all charges including $1,167,947 for depletion and depreciation and $622,000 for income taxes, $1,770,829, equal to $1.80 each on 981,348 common shares, against $771,680, or 74¢ each, in the second quarter of 1940. First half, 1941: net income, $2,669,746, or $2.72 a share, against $1,544,961, or $1.42 a share, the first six months last year. Year ended June 30, 1941: net income, $4,441,463, or $4.53 a share, against $3,148,827, or $2.85 a share, in the preceding 12 months.

Socony-Vacuum Oil Co., Inc., New York, N. Y. First half, 1941: consolidated net income, $18,000,000, equal to 58¢ each on 31,178,341 capital shares, against $22,000,000, or 70¢ a share, in the 1940 period.

Thermoid Co., Trenton, N. J., and subsidiaries. June quarter: net profit, $230,612, equal, after preferred dividend requirements, to 43¢ a common share, against $210,343, or 38¢ a share, in the March quarter, and $138,882, or 23¢ a share, for the June, 1940, quarter. First

(*Continued on page* 88)

EUROPE

GERMANY

Improvements in Machinery and Equipment

The widespread substitution of imported raw materials by synthetic rubbers, thermoplastics, and artificial fibers, combined with a shortage of labor, has forced the local rubber industry to overhaul its equipment and introduce improved and new machinery.

For finely dividing buna, a necessary step before it can be further processed or reclaimed, are machines for grinding and separating crumb buna and restoring it to its original condition after it has become compacted in storage, as well as other machines that can cut three rolls of buna sheet at a time into narrow strips two, four, or six millimeters wide. The rolls of sheet run off automatically, and cutting is carried out by a rapidly rotating knife-driving shaft, the blades of which run against stationary counter-blades. When these rolls are cut three at a time, the capacity is about 500 kilograms an hour.

In the new universal autoclave the shredded or ground buna can be given thermal degradation treatment, can be reclaimed or vulcanized. The device is heated by steam and electrically superheated.

The latest mixing mills are specially constructed for dustless charging with chemicals and fillers.

Centrifugal dissolution machines are also suitable for mixing chemicals with latex as well as handling rubber solutions. One such machine has a special airtight closing to keep loss of solvent at a minimum. The cover is so constructed that additional solvent can be added during the dissolution process through special inlets without opening the cover or interrupting the process.

Calender construction has also been modified. In one new model the rolls are not crowned, but the deflection of the longitudinal axis resulting when the rolls are under pressure is corrected by arranging the rolls so that they can be slightly tilted toward each other. The degree of inclination can be regulated in accordance with the pressure, that is, it is greater when pressure is increased and less when pressure is decreased. In any case the amount of inclination is small and even with maximum pressure need not exceed a few millimeters.

Advertisement

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See page 107

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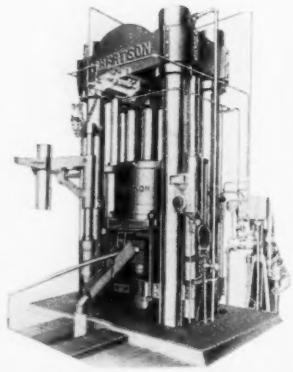

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Company News

Blodner & Vierschrodt, Gotha, reported net profits of 229,768 marks for 1940.

The Krakauer Gummiwerke A.G. of Krakau (formerly Poland) showed net profits of 67,662 zloty for 1940 on a share capital of 1,000,000 zloty. In 1939 the company booked a loss of 137,390 zloty.

Another former Polish concern, Woll- u. Gummi-Werke F. W. Schweikert, A. G., Litzmannstadt, has reduced its capital of 10,200,000 zloty to 6,600,000 zloty.

GREAT BRITAIN

Rubber Compounding in Wartime[1]

The needs of the hour demand the elimination of all waste also in the rubber industry and careful utilization of available materials in order to render the industry as independent as possible of importations. Consequently the matter of rubber compounding in wartime is important.

Revision of miscellaneous formulae throughout the country would result in the reduction of such essential materials as zinc oxide and stearic acid by at least 33%. It is suggested that magnesium and calcium oxides, which were formerly largely used and which accelerate vulcanization and activate certain accelerators, could replace zinc oxides to some extent. Among other substances which accelerate vulcanization are ammonia, organic amines and their salts, alkali carbonates, and reclaimed rubber. Instead of stearic acid, mixed fatty acids and naphthenic acid are recommended. Zinc naphthenate, it is added, is now also available.

Hundreds of accelerators are on the market, although about 75% of the vulcanized rubber in the country is prepared with mercaptobenzthiazole, benzthiazyl disulphide and mixtures of the former and guanidine salts, and it is suggested that 10 to 15 chosen accelerators would meet all requirements. Such reduction would permit manufacturers to concentrate on the production of those for which intermediates are more easily obtainable. The use of inorganic accelerators should be investigated, and the adoption of litharge, which is as active as the guanidine type of accelerators, should be considered for mixes where color is not important.

The proper selection of accelerators and the increased adoption of low sulphur compounds would help reduce the consumption of antioxidants, as well as their number. The aging properties of a stock containing 0.6 to 0.75% sulphur and a two-accelerator combination of either mercaptobenzthiazole and tetramethylthiuram disulphide or benzthiazyl disulphide and zinc dimethyldithiocarbamate are as good as a normal 3% sulphur stock to which 1% antioxidant has been added. With regard to pigments the best solution in wartime would be to

[1] *India-Rubber J.*, July 26, 1941, pp.1-3.

reserve them for export goods exclusively. However, suitable choice of fillers in rubber stock permits reduction of the amount of pigment required; barytes is the most satisfactory filler in this respect.

Instead of imported pine tar, now very difficult to obtain, substitutes, mainly coal-tar derivatives, are available. But these must be used with care as they tend to produce surface bloom. It is suggested that the most satisfactory solution of the softener problem is the production of a softer grade of raw rubber. On the plantations soft rubbers have already been produced by the incorporation of emulsions of softeners in the latex. The use of peptizing agents for the same purpose is also under investigation.

In general rubber compounding the chief fillers will have to be china clay and whiting; while anhydrous calcium sulphate could serve as a satisfactory substitute for these fillers and for barytes. Good-quality anhydrous calcium sulphate is available in ample quantity; it is free from copper and manganese, contains less than 0.1% iron, and has the same specific gravity as whiting.

Channel black cannot be entirely replaced, but its use could be confined to articles subjected to extremely hard usage. A small proportion of channel black, say 5 to 10%, could be replaced by a colloidal china clay as Devoblanc, stockalite, or by light magnesium carbonate, all of which are made in Britain.

Although limestone and natural whiting in abundance are available for the preparation of calcium carbonate, which could be used as a substitute for either thermatomic black or zinc oxide, it is not at present made here.

The above remarks evoked some criticism as well as additional information from correspondents. Thus J. W. & T. A. Smith, Ltd., deny that the intermediates for organic colors all are imported. Harold Wilson and Witco, Ltd., call attention to their new British-made Witcoline pine tar substitute which is not derived from coal tar, nor do coal tar products in any way enter its manufacture. Binney & Smith & Ashby, Ltd., declared that an excellent calcined kieselguhr, passing 200 mesh and of fairly good color is regularly arriving from Portugal. Referring to the suggestion to reduce the number of accelerators and antioxidants, Monsanto Chemicals, Ltd., explained that this question was thoroughly investigated in the early days of the war, and it was found that no real gain is likely to ensue from a restriction of the range of accelerators. The company therefore decided not to discontinue manufacture of any rubber chemical except in certain isolated cases.

The Future Crude Rubber Situation

A consideration of the various influences that may affect the future of the crude rubber industry leads a writer in the *Investors' Chronicle* to the conclusion that there is no cause for pessimism here, although the uncertainties involved suggest the need of a certain amount of caution.

The heavy United States buying program, which is already in arrears, and the huge absorption by the American manufacturing industry promise well for the hopes of rubber producers for a fairly prolonged period of favorable conditions, though fears exist that this stringency of American rubber supplies may stimulate competition from synthetic rubber.

Among post-war possibilities to be faced are the effects of the liquidation of United States stocks, but these may well be offset by demand from the European continent which will undoubtedly make itself felt—if the end of the war ushers in a period of greater cooperation among nations. The normal consumption of pre-war Europe was around 250,000 tons annually.

Notes

At the third annual meeting of the British Rubber Publicity Association, A. C. Matthew was elected chairman. Mr. Matthew, who is a partner of Robertson Bois & Co., tea and rubber company secretaries, was a rubber planter in Ceylon and has maintained close connections with the rubber industry since 1904. He was president of the Ceylon Association in London in 1938 and 1939 and is also this year's chairman of the Rubber Growers' Association, which had elected him to its council in 1934.

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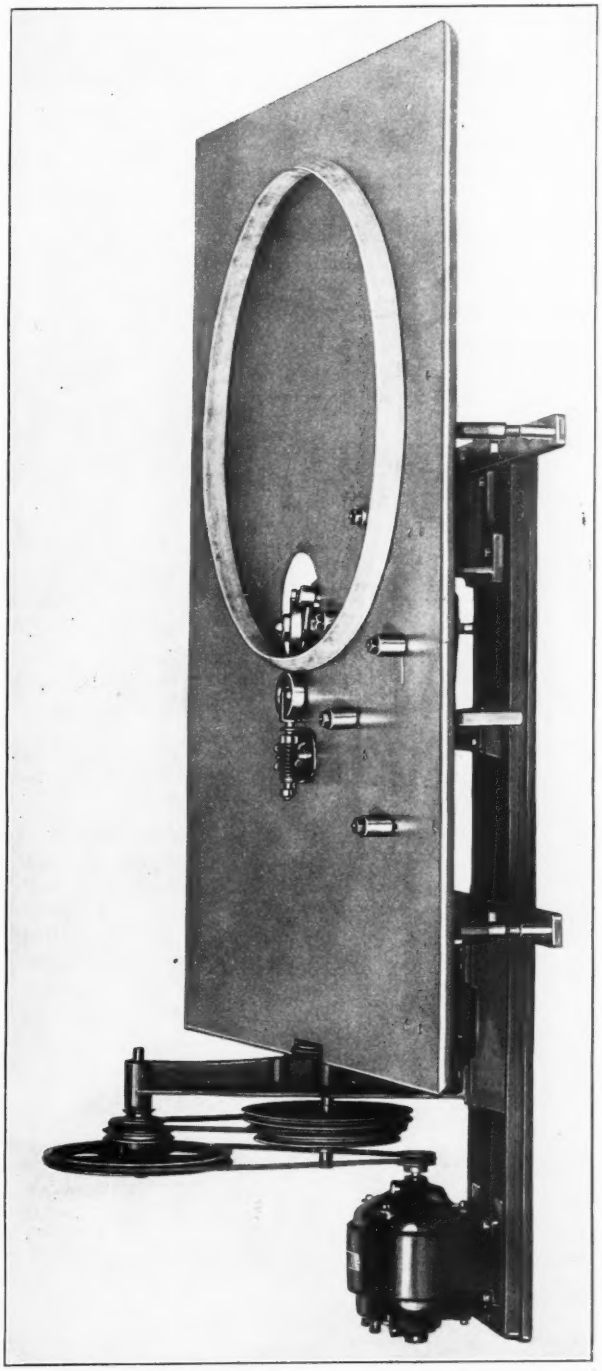

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The North British Rubber Co., which cleared off arrears on preference capital a year ago, when it also resumed ordinary dividends with a payment of 5%, now repeats this dividend. The trading profit over the past business year was £250,000 against £169,800, but owing to exceptional charges, the final result was a net profit of £64,300, against £76,800 the year before.

General Electric Co., Ltd. (England) for the year ended March 31 reported a profit of £1,722,643 after deducting excess profits taxes at the rate of 100%, contrasted with a profit of £1,892,994 after an excess profits taxes deduction at the rate of 60% in the preceding fiscal year.

FAR EAST

MALAYA

Clone Performances on Lanchang Estate

Some revealing facts regarding the performance of various clones as observed on Lanchang Estate of the Chermang Development Co., Ltd., are disclosed by the Planting Correspondent of the *Straits Budget*. The Chermang Development was formed in 1930 by a group of local rubber companies to develop an estate on the most modern lines. An area of 3,645 acres of jungle land was acquired, and about 2,000 acres have now been planted. Among the clones selected in 1930, the best are found to be Tj. 1, Glenshiel 1, P.B. 86, and P.B. 186. All these clones, it is asserted, may be safely relied on to yield well over 1,000 pounds an acre and are, in fact, already doing so. The company is, therefore, fortunate in having more than half the estate planted with these clones. Other good clones are B.D. 5 and P.B. 23; these are rather slower in coming up to expectations.

Over against these must be placed certain clones (P.B. 183, Av. 256, and S.R. 9) selected in 1930, which at the end of 1940, after two years' tapping, had not even reached 500 pounds an acre. P.B. 183 displays undesirable growth features and also has a tendency to die back. Av. 256 does so poorly on Lanchang Estate that it has been decided to replant a part with Tj. 1. The rest of this area will be allowed a further chance to show possible yield increase.

The Planting Correspondent, himself a planter, points out that many estates must be finding that certain clones which showed satisfactory experimental results are disappointing when planted on a commercial scale and predicts that sooner or later many companies will be announcing their intentions to replant such areas.

With regard to brown bast, it is significant that the incidence of the disease is greatest where the yields per acre are highest. In a table of a brown bast census shown by the manager of the estate, it was seen that one first-rate clone showed 13.7% of brown bast and other high-yielding areas between 6 and 7%, whereas the poorer-yielding areas showed only about 2%. Says the writer:

"The table . . . confirms contentions more than once put forward in Planting Topics, that continued high rates of yield are likely to be closely related to the incidence of brown bast, and the older generation of planters in Malaya will, I think,

bear me out when I say that unless brown bast is effectively dealt with in early years, it may destroy the commercial value of the tree for life, though in other respects, it appears as healthy as any other."

Clonal Seeds or Buddings?

The controversial question of the choice of planting material —clonal seed or budding—is again being aired. The writer quoted above showed recently that evidence favoring seedling trees is accumulating. Report of results from clonal seedlings have, of necessity, been sparse as compared with those concerning budgrafts since hardly any estate showed interest in this material prior to 1934. Even in that year only three estates are known to have bought isolated garden seed. However since then there has been a steady increase in the use of this seed, but it will not be until the end of 1941 that sufficient data will be available to throw proper light on the merit of clonal seedlings in comparison with buddings.

But two estates have been able to supply figures concerning small areas planted with clonal seed, and in both cases very satisfactory results were obtained over a period of six months on five-year-old trees. In one case the yield averaged 648 pounds per acre, and in the other, 605 pounds. The manager of one of these estates reported that budgrafts are nearly twice as vulnerable to wind storms as clonal seed trees.

On Kuala Ketil Estate in the Prang Besar experimental area where the whole of the isolated seed plots, covering 81 acres, was commercially tapped for the first time when only 6½ years old, an average yield of 626 pounds per acre was obtained over a period of eight months, compared with a yield of only 388 pounds per acre over the same period for 27 acres of budgrafts (P.B. 186, 183, and 86.)

NETHERLANDS INDIA

Stock for Budgrafts

J. F. Schmole recently described[1] results of experiments conducted at the Polonia experimental gardens, Sumatra, with budgrafts on *Hevea brasiliensis* stock and on *Hevea spruceana* hybrid, which indicate that the latter may prove very valuable for improving yields and the development of budgrafts.

The *Hevea brasiliensis* stock comes from seed picked up at random in the selection garden Soengei Pantjoer; while the Cultuurtuin at Buitenzorg, Java, supplied seed obtained from *Hevea spruceana* pollinated by *Hevea brasiliensis*. In both cases budding was carried out in January, 1931, with clones Av. 49, Av. 50, and Av. 256. There were 12 buddings of each clone on each type of stock; the buddings of each clone were planted in one row, two buddings on *Hevea brasiliensis* stock alternating with two on *Hevea spruceana* hybrid stock. In June, 1935, the trees were tapped for the first time.

Careful observation of the trees to the end of 1940 shows that the growth of the buddings on *Hevea spruceana* hybrid stock is considerably better than that of buddings of the same clones on *Hevea brasiliensis* stock, and this is seen not only in the better development of crowns and stems, but also in the thicker bark, both untapped and renewed, and the greater number of latex vessels. The yield of the buddings on *Hevea spruceana* hybrid stocks is also considerably higher. The difference increases as the trees grow older, but decreases as the tapping cut approaches the union of stock and scion.

The color of crepe prepared from latex of the buddings on *Hevea spruceana* hybrid stock is yellower than *Hevea brasiliensis* crepe. Samples of the former have been sent to the West Java Experiment Station and to the Goodyear Rubber Plantations Co. for investigation of the internal properties, and results indicate that there are no important deviations from normal *Hevea brasiliensis* rubber in this respect.

[1] "*Hevea Brasiliensis* and *Hevea Spruceana* as Stock for Budgrafts." *Arch. Rubbercultuur*, July 5. 1941, pp. 149-65.

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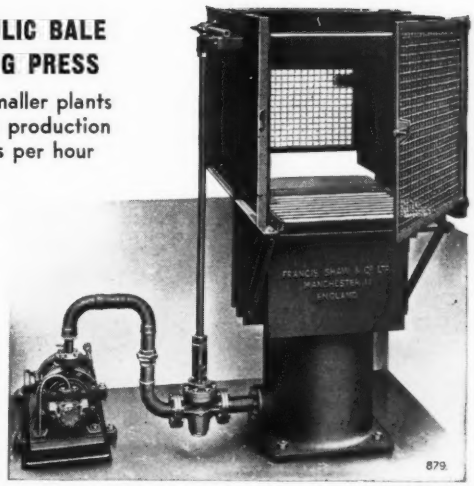

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Netherlands India Institute for Rubber Research

The Rubber Research Division of the West Java Experiment Station has in recent years developed to such an extent that it was felt necessary to incorporate it as a separate organization; so a new organization was formed June 26, 1941, known as the Netherlands India Institute for Rubber Research, the founders of which are the Government of Netherlands India, the A.V.R.O.S. (General Association of East Coast of Sumatra Rubber Planters), and the Union of Proprietors of Netherlands India Rubber Estates. The latter union is the organization of the rubber producers who belong to the Algemeen Landbouw Syndicat (General Agricultural Syndicate.) The Institute will continue and also expand the work of the former Rubber Research Division, devoting itself to the promotion of the use of rubber in the widest sense, and to this end will carry out investigations of new applications of rubber and endeavor to extend existing uses by propaganda and other appropriate means.

The new organization, established at Buitenzorg, takes over the buildings, equipment, and personnel of the former Rubber Research Division; in addition a new office, to be built on the Van Imhoffplein, Buitenzorg, is planned.

An Administration Council will govern the Institute and will consist of nine members, one of whom will also be the chairman. All will be appointed by the Governor General; the chairman, on the recommendation of the Council; four members, on the recommendation of the Directors of Economic Affairs and Administration of the Interior; the next two, by recommendation of the A.V.R.O.S.; and the last two by recommendation of the Rubber Union; so that the body will be fully representative. The first Council consists of: P. Honing, chairman, D. R. Koolhaas, H. van Lennep, A. Luytjes, G. J. Schalten, H. Kolkman, L. M. Reuvers, F. Kramer, and H. A. H. N. Gelderman.

Research work at the new Institute will be under the direction of G. M. Kraay, hitherto head of the Rubber Research Division of the West Java Experiment Station.

Rubber Exports the First Half of 1941

The Central Bureau of Statistics reports that estates exported 30,031 tons of crude rubber in June, 1941, against a quota of 27,827.5 tons for the month. However, the figures for the first six months of 1941 show a considerable shortage; permissible exports were 166,965.5 tons, but the amount actually exported was 140,875 tons, or 26,090.5 tons below quota.

Shipments of native rubber during June, 1941, were unusually low, 19,862 tons, against permissibles of 26,828 tons. Native rubber exports the first half of 1941 totaled 157,076 tons, against a quota of 160,964 tons, showing a deficit of 3,888 tons.

At the same time preliminary figures indicate that stocks of estate rubber held on estates and by recognized dealers at the end of May, 1941, totaled 29,488 tons; stocks of native rubber held by recognized exporters were 16,555 tons; in all 46,043 tons.

CEYLON

Some concern is expressed at Ceylon's failure to reach its rubber quota. During the first half of 1941 exports were indeed 6,000,000 pounds higher than during the same period last year, but this represents an increase of only about 7%; whereas in the meantime the quota was raised 20% (from 80% to 100%).

In Ceylon the comparatively poor showing is ascribed to unfavorable weather conditions. However, not only Ceylon, but other restriction countries appear to be having difficulty in filling the 100% quota, and some London experts are reported to have advised the adoption of a more drastic tapping method like spiral-cut tapping all around the trees every fourth day as the only means of filling quotas and meeting defense rubber requirements of Britain and the United States.

INDIA

India's rubber manufacturing industry has been stimulated by war conditions which have restricted imports while increasing the need of large quantities of rubber goods. Thus the two American and two British concerns operating here have raised their output so that they are now supplying 75% of the local demand for tires. The American share in the total business comes to somewhat more than half, if imports from the United States are included. In 1940 the value of imports of all kinds of tires and tubes for motor vehicles amounted to $1,646,267, against $895,385 in 1939. Of European suppliers, Michelin still retained some trade through its British factory. Until March 4, 1941, when the Bridgestone company was declared an enemy firm, this Japanese concern enjoyed a brisk sale for its tires in India.

Requirements of bicycle tires, heels, soles, and mechanical rubber goods are largely supplied by home production. Nevertheless American shipments of some articles, as hose and belting, increased considerably in 1940 as compared with 1939. The bulk of the imports of surgical and hospital rubber goods comes from the United States.

HONG KONG

The rubber industry in Hong Kong is represented by 10 factories manufacturing footwear and 13 factories producing other rubber goods. Of the former, nine concerns, and of the latter, three, comply with British imperial preference requirements. The larger firms employ as many as 2,000 workers, and the smaller ones not more than 200. The chief products are rubber and canvas footwear, but the output also includes heels, rubber straps, erasers, rickshaw tires, gas masks, etc. The local rubber footwear industry has grown rapidly in the last five years, and exports have risen steadily. In 1936 exports of these goods represented a value of $1,297,340; in 1937, $1,673,430; 1938, $2,019,190; 1939, $2,314,890; and in 1940, $2,559,160.

The present imperial preference system requires that all canvas and rubber used in rubber footwear manufacture come from Empire countries; so most of the canvas is bought from the United Kingdom, while the rubber is supplied by British Malaya. Chemicals and eyelets are imported from the United States.

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Editor's Book Table

BOOK REVIEWS

"Industrial Plastics." Second Edition, 1941. Herbert R. Simonds. Published by Pitman Publishing Corp., New York, N. Y. Cloth, 6 by 9 inches, 385 pages. Indexed. Price $4.50.

In this volume the author, himself an engineer, regards plastics as materials of construction rather than complicated chemical structures; in fact, only one chapter is devoted to a consideration of the theoretical chemistry of plastics. In one of the early chapters 45 pages are used in reviewing briefly the preparation, properties, treatment, and applications of ten important plastics: phenol formaldehydes, celiulose acetates, cellulose nitrates, urea formaldehyde, styrenes, vinyl resin plastics, indenes, acrylates, casein plastics, and phenolic furfurals. Succeeding chapters discuss molding practices, physical properties, fabrication, and industrial applications of plastics. Attention is also given to equipment, plant operation, problems of design, foreign practices, and the future of plastics. It is frankly stated that a discussion of rubber is beyond the scope of the book, and only brief mention is made of the synthetic rubbers and rubber-like materials. The last chapter is a listing of plastics trade names, giving the name of the manufacturer and the type of plastic as well as the trade name.

"The New Encyclopedia of Machine Shop Practice." Edited by George W. Barnwell. Published by Wm. H. Wise & Co., Inc., New York. 1941. Cloth, 5½ by 8½ inches, 567 pages. Indexed. Price $1.98.

This manual is designed to introduce the inexperienced machine shop worker to the practices of his trade and to acquaint the experienced machinist with more advanced techniques in his particular branch of work as well as the procedure of other departments. Largely devoted to metal working by modern machinery, the book is divided into 16 chapters which discuss bench work, thread cutting, gears and gear cutting, milling and grinding, forging, machine drawing, etc. An appendix of conversion and mathematical tables is included.

NEW PUBLICATIONS

"A Handbook of White Pigments." Fourth Edition. Krebs Pigment & Color Corp., 1007 Orange St., Wilmington, Del. 28 pages. This indexed manual describes briefly each of the manufacturer's white pigments (titanium dioxide, extended titanium pigments, and lithopones), indicating field of use, consistency, physical and chemical characteristics, and other pertinent information. Three of the grades included are indicated for use with rubber. The booklet also covers the recently introduced rutile type of titanium pigments, which are said to show greater opacity and hiding power.

"Uniform Tension Unwinders with Auto-Hydraulic Brakes." Johnstone Engineering & Machine Co., Downingtown, Pa. 4 pages. This catalog describes the development and construction of the Johnstone uniform tension unwinders with auto-hydraulic brakes. The operation of the machine, designed to maintain continuous uniform tension on a web of material being unwound from a parent roll, is described, and the operating ranges of both the air cooled and water cooled types are given.

"Extruders for Plastics." National Erie Corp., Erie, Pa. 4 pages. This folder describes the construction and operation of the firm's continuous plastic extruder which forms plastics into tubes, rods, and other shapes. Other rubber and plastic processing machines made by the firm are shown.

"Water Resistance of Neoprene Compounds." D. F. Fraser. Report No. 41-2. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. 16 pages. The compounding principles discussed in this report are directed at the production of water resistant neoprene vulcanizates. Divided into nine sections and containing charts and tables, the booklet treats the theory of water absorption, the effect of metallic oxides and modifying agents, of fillers and softeners, of cure, etc. In conclusion a properly compounded neoprene stock is compared with a rubber stock compounded for low water absorption with respect to resistance to swelling in water.

"How to Make Your Tires Last Longer." The Goodyear Tire & Rubber Co., Inc., Akron, O. 12 pages. This pamplet, prepared to educate tire consumers in the conservation of rubber, contains a number of "tips" with respect to tire usage, concerning speed, tire pressure, wheel alinement and balance, brake adjustment, tire rotation, retreading, etc.

"Inspected Gas, Oil, and Miscellaneous Appliances." June, 1941. Supplement to December, 1940, List. Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago, Ill. 31 pages. This supplement contains only listings established since publication of the December, 1940, list, which must also be consulted to obtain complete information about names of manufacturers and appliances listed.

"Dunlop Serves the Empire." Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Canada. 10 pages. This booklet presents numerous photographs showing the uses of rubber in the British Empire's war effort as it is employed in the land, sea, and air forces, in fighting fires created by enemy bombs, and on the so-called "home front" where rubber is employed in gas masks, tractors, belting, etc.

"Vibration Control—Lord Bonded Rubber Shear Type Mountings." Bulletin No. 104. Lord Mfg. Co., Erie, Pa. 20 pages. Vibration control by the use of rubber mountings where the rubber is in shear is discussed in this excellent booklet, which also provides the reader with an adequate mathematical treatment of the basic engineering principles of vibration isolation. Two charts are presented: one depicts the relation between deflection and natural frequency of a suspension, and the other illustrates the percentage of isolation obtained in a suspension for any combination of static deflection and disturbing frequencies. The mathematical formulae and theory which were instrumental in drafting the curves are explained in the text. The two basic designs of vibration isolation used by the Lord Mfg. Co., viz. the tube form and the plate form, are fully described, and the booklet contains drawings illustrating dimensions and methods of installing and photographs showing the designs in use.

"Fleet Operators Tire Service Manual." Published by *Tire Rebuilders News*, 381 Fourth Ave., New York, N. Y. 46 pages. This illustrated manual contains 16 articles covering such topics as tire retreading, the relation between tire service and inflation, the effect of heat on tires, selecting tires for overloads and for maximum service, and the use of dual tires.

"Two-in-One Tape." Catalog Section 9270. The B. F. Goodrich Co., Akron, O. 4 pages. A tape said to combine two products—rubber tape and friction tape—into a single unit is described in this catalog. Consisting of a strip of cotton with insulation on both sides, the tape is reportedly applicable in all branches of electrical work, where joining and branching wires is necessary. Methods of application are described with photographs.

"V-Belts and V-Belt Drives." Thermoid Rubber Division of Thermoid Co., Trenton, N. J. 80 pages. This engineering manual presents information and tabulated data on Thermoid V-belts and complete V-belt drives—both multiple and fractional horsepower. It is said that the use of this manual alone makes it possible to select an engineered standard drive for any particular applications, or to figure a non-standard drive to meet any special requirement. The publication also includes general information about pulleys and sheave diameters.

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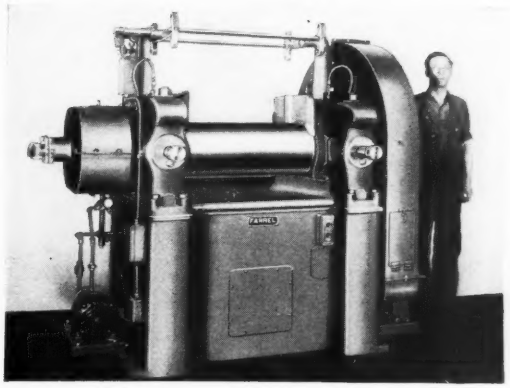

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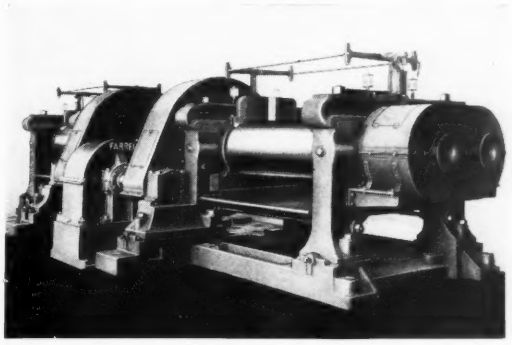

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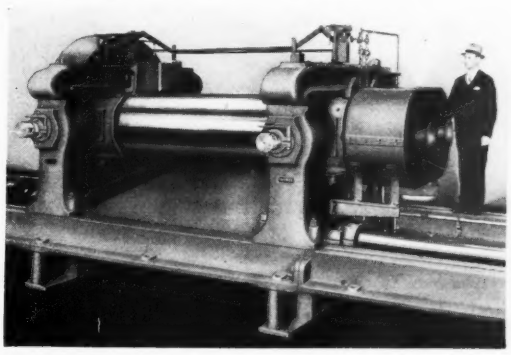

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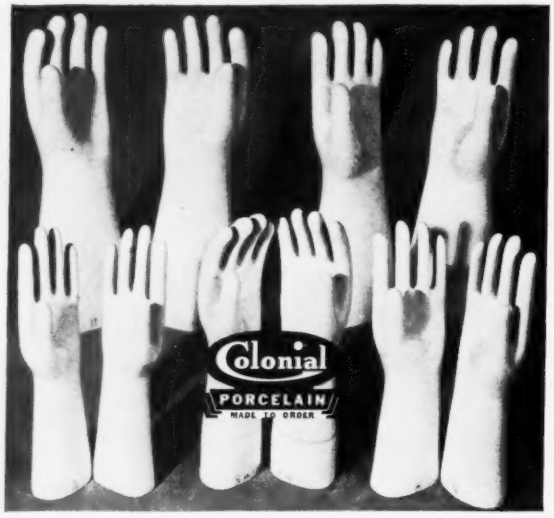

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Franklin Research Co. Publications. Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa. "Wax Similie", a six-page folder, contains two photographs showing floors which have been treated with Rubber Gloss Floor Wax and Rubber Gloss Cleaner. Accompanying captions describe the applications and advantages of these products. "The Legal Aspect of Floor Wax Maintenance", a four-page booklet, publishes two brief articles, one telling how a floor owner may protect himself from law suits started by individuals who slipped on his waxed floors, and the other listing precautions the floor owner should observe when applying a water emulsion wax to his floor. "Modern Trends in Floor Finishing and Maintenance Methods", an eight-page booklet, also contains two articles. The first reviews the development of water emulsion waxes during the last ten years, and the second describes methods by which manufacturers obtain an antique wood appearance by using a penetrating seal and wax type of finish.

"Third Report of the Board." British Rubber Publicity Association, Inc., 19 Fenchurch St., London, England. 5 pages. Describing the activities of the Association in 1940, this booklet briefly mentions research done with regard to the use of rubber for agricultural applications, such as tractor tires and milking machine parts. It also refers to the various exhibits and films prepared by the Association for use in schools and similar organizations, rubber displays for the general public, and literature published during 1940.

"Latin America as a Source of Strategic and Other Essential Materials." Report No. 144, Second Series, United States Tariff Commission, Washington, D. C. 1941. 397 pages. For sale by the Superintendent of Documents, Washington, 50¢. Divided into two parts, one describing mineral products, and the other describing agricultural, pastoral, and forest products, this book presents statistical data showing the production and consumption of commodities which are produced to some extent in Latin America and may be considered important in the national economy of the United States. The effects that the present war has produced in all Latin American trade and production are shown by figures and discussed in the text. Sections, of about ten pages each, are devoted to rubber, zinc, and titanium, and in the section in rubber it is predicted that while an increase in the price of crude rubber in the United States would stimulate Latin American production from wild trees and shrubs, the peak quantity produced in 1912—49,000 long tons—will not be reached again.

"Guide for Quality Control and Control Chart Method of Analyzing Data." American Standards Association, 29 W. 39th St., New York, N. Y. Price 75¢. The application of statistical methods to the quality control of materials and manufactured products is discussed in this manual, which defines terms used in such work and demonstrates the types followed in the construction of the control chart. The standards published in this pamphlet were developed at the request of the United States Department of War, and after revision received A. S. A. approval as American Defense Emergency Standards.

RUBBER BIBLIOGRAPHY

THERMOPLASTIC PLASTIC MATERIALS. H. J. Delmonte, *Rubber Age (N. Y.)*, Sept., 1941, pp. 393-97.

"HANGING" ROOF SAVES FLOOR SPACE IN FIRESTONE'S NEW HUGE DRY-ROOM. *Rubber Age (N. Y.)*, Sept., 1941, p. 398.

X-RAY STUDIES OF RUBBER. IV. G. L. Clark and R. L. Letourneau, *Rubber Age (N. Y.)*, Sept., 1941, pp. 399-405.

BETTER MANAGEMENT FOR THE RUBBER FACTORY. H. A. Roberts, *Rubber Age (N. Y.)*, Sept., 1941, pp. 406-408.

AFRICAN CHRYSOTILE ASBESTOS. *India-Rubber J.*, Aug. 9, 1941, p. 7.

RUBBER SITUATION CONTINUES TENSE. E. G. Holt, *Domestic Commerce*, Sept. 11, 1941, pp. 10-11.

WIRING OF MACHINES. *Product Eng.*, Sept., 1941, pp. 484-87.

French Indo-China and the Rubber Plantation Industry. *India-Rubber J.*, Aug. 9, 1941, pp. 1-2.

Rubber Compounding in Wartime. *India-Rubber J.*, July 26, 1941, pp. 1-3.

Rubber on the Rebound—from East to West. *India-Rubber J.*, July 26, 1941, pp. 6-8.

The Rubber Share Market. *India-Rubber J.*, July 19, 1941, pp. 1-2.

Influence of Moisture Content of Carbon Black on Rubber Properties. L. H. Cohan and C. R. Johnson, *Ind. Eng. Chem.*, Sept., 1941, pp. 1183-85.

Oxidation of Unvulcanized Rubber in Light. J. T. Blake and P. L. Bruce, *Ind. Eng. Chem.*, Sept., 1941, pp. 1198-1201.

Chemical Industry Serves Soviet Defense. K. Falk, *Chem. & Met. Eng.*, Aug., 1941, pp. 74-77.

Textiles Take to the Air. W. G. Ashmore, *Textile World*, Aug., 1941, pp. 44-45.

Plant Depreciation in Wartime. K. B. Wise, *Rubber Age (London)*, Aug., 1941, pp. 153-54.

Improved Method of Plywood Molding by Rubber Air Bags. *Rubber Age (London)*, Aug., 1941, p. 149.

Synthetic Rubbers. V. H. Barron, *Rubber Age (London)*, Aug., 1941, pp. 150-52. (To be continued.)

Apprentice-Training Program. F. G. Smith, *Executives Service Bulletin*, Aug., 1941, pp. 5-6.

Synthetic's Place in Industry. *India-Rubber J.*, Aug. 30, 1941, p. 3.

Plastics. *India-Rubber J.*, Aug. 30, 1941, p. 5.

Colloidal Carbon—an Indispensable Industrial Material. W. B. Wiegand, *India-Rubber J.*, Aug. 30, 1941, pp. 9-10.

Brooks Sets Swift Pace in Footwear for Sport. D. Basenfelder. *Sporting Goods Dealer*, Sept., 1941, pp. 65-66.

The Flexible Pattern of Wartime Rubber. R. Trisko, *Domestic Commerce*, Sept., 18, 1941, pp. 19-21.

Products from Diatoms. P. D. V. Manning, *Chem. & Met. Eng.*, Sept., 1941, pp. 114-15.

Properties of Mixtures of Asphaltic Bitumen and Rubber for Roadway Purposes. G. J. van der Bie and P. T. Wijnhamer, *Arch. Rubbercultuur*, 25, 1, 18-141 (1941). (English summary.)

Organic Analysis of Hevea Latex. VII. Fatty Acids, Resin Acids, Sterols, Wax-Alcohols. A Preliminary Note. R. F. A. Altman, *Arch. Rubbercultuur*, 25, 1, 142-47. (1941). (English summary.)

Hevea Brasiliensis and Hevea Spruceana—Hybrid as Stock for Budgrafts. J. F. Schmole, *Arch. Rubbercultuur*, 25, 2, 149-58. (1941); English version, pp. 159-65.

Observations on White Grubs and Their Control in Rubber Plantations. H. J. de Fluiter, *Arch. Rubbercultuur*, 25, 2, 167-270. (English summary.)

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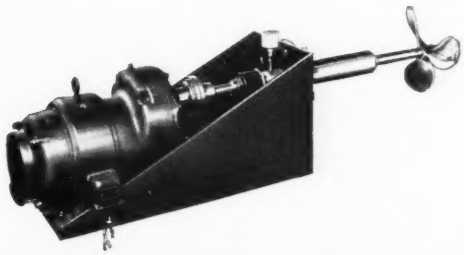

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2,248,413. **Seat Construction** Having a Sponge Rubber Cushion. A. E. Rathbun, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,248,450. **Tire Valve Stem Cap** with Outer Sheath of Rubber Extending Inwardly through the Opening to Form a Sealing Gasket. E. Eger, Grosse Pointe Park, and R. F. Ternes, Detroit, both in Mich., assignors to United States Rubber Co., New York, N. Y.

2,248,451. **Tire Valve Stem Assembly.** E. Eger, Grosse Pointe Park, and R. F. Ternes, Detroit, both in Mich., assignors to United States Rubber Co., New York, N. Y.

2,248,543. **Reflector Unit** with Resilient Sealing Medium. C. H. Mahoney and W. S. Brian, assignors to Ken-Rad Tube & Lamp Corp., all of Owensboro, Ky.

2,248,565. **Windshield Wiper.** J. W. Anderson, assignor to Productive Inventions, Inc., both of Gary, Ind.

2,248,605. **Electric Plug Connection** with Rubber Washer. J. A. Buckley, Wichita, Kan.

2,248,652. **Starting Device** with Resilient Member. S. Ysskin, Newark, N. J.

2,248,670. **Flashlight Lamp** with Internal Rubber Ball Pressure Indicator. H. Helwig, Berlin-Schoneberg, and M. Maetschke, Berlin-Charlottenburg, both in Germany, assignors to General Electric Co., a corporation of N. Y.

2,248,680. **Ice Cube Tray** with Rubber Division Member Therein. R. L. Hallock, Larchmont, N. Y.

2,248,718. **Connector Clip** with Rubber Base Portion. W. Owen, Pittsburgh, Pa., assignor to Pittsburgh Plate Glass Co., Allegheny County, both in Pa.

2,248,739. **Tire Casing** with Inner Tube Means Comprising a Pair of Twin Tubes Having Abutting Central Walls, and a Communicating Passage between the Walls near the Base of the Tubes. B. H. Benson and B. E. Mendelsohn, both of Brookline, Mass.

2,248,761. **Oil Seal** with a Sealing Element Comprising a Layer of Synthetic Rubber United by Fabric to Another Layer of Synthetic Rubber Suitably Loaded with Graphite to Reduce Friction. T. O. Kosatka, assignor to Victor Mfg. & Gasket Co., both of Chicago, Ill.

2,248,861. **Trousers,** Including Belt Having Elastic Section. E. Friedman, Lawrence, N. Y.

2,248,869. **Resilient Mounting Device** with Rubber Cushioning Element. H. K. Harwick, Darby, assignor to Edward G. Budd Mfg. Co., Philadelphia, both in Pa.

2,248,900. **Stocking** Incorporating an Elastic Yarn. W. L. Smith, Jr., Pawtucket, assignor to Hemphill Co., Central Falls, both in R. I.

2,248,901. **Cord Tire** Having Heat Resistant Fabric Disposed in Superposed Plies, Each Consisting of Closely Spaced Parallel Cords Made from Mercerized Cotton Yarn. W. E. Vecsey, Barnesville, Ga., assignor to General Tire & Rubber Co., Akron, O.

2,248,934. **Inflatable Catheter.** J. M. Auzin, Warwick, R. I., assignor to Davol Rubber Co., a corporation of R. I.

2,248,963. **Rubber Balloon Container** for Confections. L. G. Copeman, assignor to Copeman Laboratories Co., both of Flint, Mich.

2,249,017. **Rubber Hydrochloride**—Coated Welding Rod. A. R. Lytle, Niagara Falls, N. Y., and T. H. Vaughn, Trenton, Mich., assignors to Oxweld Acetylene Co., a corporation of W. Va.

2,249,091. **Electrical Condenser** with Hermetically Tight Seal of Rubber. P. Robinson, Williamstown, and M. Nazzewski, assignors to Sprague Specialties Co., both of North Adams, all in Mass.

2,249,141. **Fluid Seal** for Shafts. L. A. Johnson, Hillsborough, assignor to National Oil Seal Co., Oakland, both in Calif.

2,249,198. **Combination Abdominal Supporter and Shorts,** Incorporating Elastic Yarn. H. A. Carter, assignor to William Carter Co., both of Needham Heights, Mass.

2,249,275. **Electric Insulating Material** Comprising Consolidated Stretchable Plastic Sheet with Stable Insulating Resin Surrounding Individual Fibers of Asbestos. A. J. Hanley, assignor to Respro Inc., both of Cranston, R. I.

2,249,298. **Therapeutic Chair** for Hemorrhoids. L. P. Ratti, Buenos Aires, Argentina.

2,249,316. **Vaginal Diaphragm.** W. V. Lay, Denver, Colo.

2,249,320. **Sphygmomanometer.** E. C. McGehee, Ashland, Ky.

2,249,421. **Fender Shield and Adapter** with Cushioning Bead. A. P. Ferguson, assignor to Houdaille-Hershey Corp., both of Detroit, Mich.

2,249,424. **Weather Strip** with Pressure-Sensitive Adhesive. C. A. Hanington, Freeport, N. Y.

2,249,458. **Electrical Insulation** Comprising Essentially a Wax-Free Vulcanized Mixture of Rubber and Polystyrene Comprising not over 40% by Weight of the Rubber. E. T. Croasdale, Bridgeport, Conn., assignor to General Electric Co., a corporation of N. Y.

2,249,464. **Wringer Roll Stop Mechanism.** N. L. Etten, assignor to Chamberlain Corp., both of Waterloo, Iowa.

2,249,510. **Forming an Article Having a Resilient Sleeve Therein.** O. B. Welker, Cromwell, Conn., assignor to A. R. Teare, Cleveland, O., as trustee.

2,249,547. **Stretchable Windshield Sealing Strip** Comprising Partially Vulcanized Rubber and a Filler. G. T. Balfe, assignor to Detroit Gasket & Mfg. Co., both of Detroit, Mich.

2,249,550. **Wrist Watch Protector** Consisting of a Transparent Rubber Tube. L. C. Williams, Memphis, Tenn.

2,249,593. **Insertable Insulating Bushing** for a Wiring Raceway Assembly. C. A. Badeau, Highland Park, assignor to Thomas & Betts Co., Elizabeth, both in N. J.

2,249,637. **Wheel** Having Two Tires with Sloping Tread Portion for Pressing Opposite Sides of Planted Hills. E. L. Rietz, Riverside, Ill., assignor to International Harvester Co., a corporation of N. J.

2,249,638. **Press Wheel Structure** with Attached Annular Tread Part of Flexible Material. E. L. Rietz, Riverside, Ill., assignor to International Harvester Co., a corporation of N. J.

2,249,668. **Foundation Garment.** P. H. Robbins, assignor to Poirette Corsets, Inc., both of New York, N. Y.

2,249,670. **Toy Figure** with Elastic Band Motive Power. B. M. Sidle, Des Moines, Iowa.

2,249,827. **Multiple Pole Plug.** W. P. Herman, Pawtucket, R. I.

2,249,912. **Latex Sponge Blackboard Eraser.** J. H. Oxley, Watertown, Mass., assignor to American Crayon Co., Sandusky, O.

2,249,930. **Water Pump Seal.** C. S. Bailey and H. A. Reynolds, both of Lockport, N. Y., assignors to General Motors Corp. Detroit, Mich.

2,249,936. **Diathermy Applicator Pad** with Elastic Band Insulation. C. J. Birtcher, Alhambra, Calif.

2,250,180. **Fountain Pen.** A. Calo, North Arlington, N. J., assignor to Associated Pen Corp., New York, N. Y.

2,250,196. **Vulcanizer Seal** with Rubber Gasket. F. I. Honderich, Natchez, Miss., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.

2,250,267. **Back Supporter Cushion** with Elastic Belt Retaining Means. C. G. Lins, Tuckahoe, N. Y.

2,250,331. **Windshield Cleaner.** E. C. Horton, Hamburg, assignor to Trico Products Corp., Buffalo, both in N. Y.

2,250,359. **Elastic Fabric.** D. M. Clark, Worcester, Mass.

2,250,373. **Dental Plate.** R. S. Hagerman, Wilas, Colo.

Dominion of Canada

398,043. **Leather-Like Material** Produced by Applying Resilient Adhesive Coating to a Fibrous Base, Depositing Cut Fibers on the Surface in Continuous Form to Adhere the Same Thereto, Saturating the Thus-Flocked Fibers with a Solution Containing Tannable Protein Material, and Tanning Such Material after Saturation in, on, and between the Fibers. R. C. McQuiston and H. C. Hopewell, co-inventors, both of Boston, Mass., U. S. A.

398,085. **Engine Starter Drive** with Elastic Bushing. Bendix Aviation Corp., South Bend, Ind., assignee of Y. Sekells, Elmira Heights, N. Y., both in the U. S. A.

398,086. **Motor Vehicle** Having a Power Plant Resiliently Mounted. Briggs Mfg. Co., Detroit, assignee of J. Tjaarda, Birmingham, both in Mich., U. S. A.

398,088. **Engine Starter** Having a Resilient Driving Element. Briggs & Stratton Corp., assignee of J. W. Fitz-Gerald, both of Milwaukee, Wis., U. S. A.

398,100. **Electric Blasting Initiator** with Rubber-Like Bridge Plug. Canadian Industries Ltd., Montreal, P. Q., assignee of C. R. Johnson, Glen Mills, Pa., and R. R. Nydegger, Wilmington, Del., co-inventors, both in the U. S. A.

398,107. **Electric Blasting Initiator** with Leg Wires Embedded in Rubber. Canadian Industries Ltd., Montreal, P. Q., assignee of S. L. Handforth, Wilmington, Del., C. R. Johnson, Glen Mills, Pa., and G. H. Smith, Woodbury, N. J., co-inventors, all in the U. S. A.

398,108. **Electric Blasting Initiator** with Leg Wires Embedded in Rubber. Canadian Industries Ltd., Montreal, P. Q., assignee of M. H. English, Pompton Lakes, N. J. and R. R. Nydegger, Wilmington, Del., co-inventors, both in the U. S. A.

398,120. **Dielectric Bushing** with Resilient Gasket. Canadian Westinghouse Co., Ltd., as-

signee of L. B. Chubbuck, both of Hamilton, Ont.

398,154. **Flexible Engine Support** with Rubber Pads. D. Napier & Son, Ltd., London, assignee of F. B. Halford, Edgware, Middlesex, and C. F. Vickers, London, co-inventors, both in England.

398,179. **Combination Cylindrical Rubber Spring and Shield.** Transit Research Corp., assignee of E. H. Piron, both of New York, N. Y., U. S. A.

398,182. **Sand Blasting Stencil** Comprising a Blast Resistant Sheet Formed of Vulcanized Rubber and an Equal Weight of Glue to Make the Sheet Inelastic, and an Adhesive Coating on the Back Surface. Van Cleef Bros. (a partnership consisting of N., F., and P. Van Cleef), assignee of C. E. Frick, all of Chicago, Ill., U. S. A.

398,209. **Anti-Vibrating Resilient Support.** M. F. A. Julien, Paris, France.

398,284. **Inner Tube** Having a Wall Comprising Inner and Outer Laminae of Rubber Composition, These Lamina Having Perforations Extending Therethrough, and Inner Lamina Being Vulcanized to the Inner Face of the Outer Lamina and Having Portions Extending into the Perforations to Define Walls Opposing the Lateral Walls of the Perforations. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. N. Iknayan, Indianapolis, Ind.

398,285. **Inner Tube** Having a Pair of Circumferentially Extending Flaps Solely of Soft Elastic Rubber Attached Respectively to the Opposite Side Walls Adjacent the Rim-Engaging Region, the Flaps Extending Inwardly, Forming with Rim-Engaging Region Double-Wall Sections throughout Those Portions of the Inner Tube Normally Adjacent the Junctions Formed between an Encasing Tire and a Supporting Rim. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Eger, Grosse Pointe Park, Mich., U. S. A.

398,339. **Radio Condenser Mounting** with Rubber Pads. Wells-Gardner & Co., assignee of J. H. Clark, both of Chicago, Ill., U. S. A.

398,354. **Safety Inner Tube.** G. C. Arey, Fort Thomas, Ky., U. S. A.

398,451. **Suction Cleaner Brush** with Resilient Vibration-Dampening Mounting Cap. P. A. Geier Co., assignee of E. F. Martinet, both of Cleveland, O., U. S. A.

398,454. **Anti-Skid Tire Tread** Having a Plurality of Parallel Ribs Extending Circumferentially around the Entire Periphery of the Tire Tread and Being Individually of Greater Height Than Width and Laterally Unstable to Permit Flexing Thereof under Side Thrusts. General Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

398,467. **Resilient Joint.** Lord Mfg. Co., assignee of T. L. Yates, both of Erie, Pa., U. S. A.

398,471. **Fur Trimmed Overshoe.** Miner Rubber Co., Ltd., assignee of N. A. Austin, both of Granby, P. Q.

398,474. **Paper Machine Slice** with Rubber-Shod Shoes. Paper Patents Co., Neenah, assignee of W. R. Kellet, Menasha, and H. C. Brien, Neenah, co-inventors, all in Wis., U. S. A.

398,475. **Paper Machine Hydraulic Inlet System** with Rubber Shoe. Paper Patents Co., Neenah, assignee of W. R. Kellett, Menasha, and H. C. Brien, Neenah, co-inventors, all in Wis., U. S. A.

398,499. **Windshield Wiper.** Trico Products Corp., Buffalo, assignee of E. C. Horton, Hamburg, both in N. Y., U. S. A.

398,504. **Highway Marking Guard.** Louis S. Wertz, Inc., assignee of H. F. Elliott, both of Cleveland, O., U. S. A.

398,542. **Ear Stopper.** V. O. Knudsen, Los Angeles, Calif., U. S. A.

398,543. **Electrical Locking Receptacle** with Resilient Body. A. L. Kuhlman, Ann Arbor, Mich., U. S. A.

398,549. **Safety Step Tread** with Rubber Edging Strip. S. D. Moore, Cleveland, O., U. S. A.

398,553. **Inelastic Composite Thread** Composed of Rubber Thread Associated with Sized and Set Crepe Textile Yarns of Rayon, Silk, Etc. T. L. Shepherd, London, England.

398,628. **Rubber Highway Marker.** Resilient Products Corp., assignee of T. W. Stedman, both of New York, N. Y., U. S. A.

398,681. **Elastic Thread and Fabric.** P. E. F. Clay, Radcliffe-on-Trent, Nottinghamshire, England.

398,686. **Tire Casing** Having an Elastic Base Tread Material Applied to the Crown Portion of the Carcass, and an Elastic Band of Road-Engaging Tread Material Applied over the Base Crown Tread Material, the Elastic Elements of the Carcass and Base Tread Material Being, When the Casing Is Inflated and Unrestricted against Outward Expansion, Subject to Their Own Yielding Tension to Distort to a Laterally Expanded and Circumferentially Contracted Condition Wherein All Points about the Peripheral Circumference Will Have a Radius Approximately Midway between the Normal Expanded Radius and the Normal Rolling Radius. P. E. Hawkinson, Minneapolis, Minn., U. S. A.

398,704. **Gasket Material** Comprising Shredded Cork, a Carbon Black Filler, and Polymerized Chloroprene. Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of W. B. Atkinson, Pittsburgh, Pa., U. S. A.

398,725. **Electric Lamp Holder** with Soft Rubber Handle. Federal Wire & Cable Co. Ltd., assignee of E. J. Goetz, both of Guelph, Ont.

United Kingdom

537,463. **Resilient Couplings.** G. H. Schiefer-stein.

537,511. **Electric Cables.** J. Gray.

537,655. **Electrically Insulating Bushings or Sleeves.** A. Reyrolle & Co., Ltd., I. W. A. Kirkwood, and P. D. Ritchie.

537,686. **Shock - Absorbers.** F. J. Cleveland, (Bendix Aviation Corp.).

537,714. **Annular Member of Channel Shaped Cross-Section.** Dunlop Rubber Co., Ltd., and G. H. Whale.

537,778. **Wringers, Etc.** Lovell Mfg. Co.

537,822. **Electric Cables and Electric Cable Installations.** A. C. Timmis.

537,823. **Resilient Mountings** for Radiophones, Phonographs, Etc. Fabbrica Italiana Magneti Marelli.

537,963. **Rubber-Shod Wheels.** T. B. Andre Rubber Co., Ltd., and T. Gillett.

538,068. **Electric Cables.** R. F. D. Milner.

538,096. **Flexible Couplings** for Power Transmission between Two Rotary Members. Soc. Italiana Pirelli.

PROCESS

United States

2,251,047. **Surface Marking Rubber Insulated Cables, Wires, Etc.** T. W. Gangloff, Dallas, Pa., assignor to Okonite Co., Passaic, N. J.

2,251,273. **Adhesive Sheet.** R. G. Drew, assignor to Minnesota Mining & Mfg. Co., both of St. Paul, Minn.

2,251,295. **Making Waterproofed Coated Sheet Material** by Spraying a Coating Compound of Latex, Animal Glue, a Tanning Agent, and an Alcohol on to the Face of a Base Sheet, Spreading the Compound Uniformly, and Simultaneously Pressing It into the Surface Fibers, and Removing the Liquid Fugitive Components from the Treated Sheet Material. H. A. Sheesley, assignor to Tufide Products Corp., both of Portland, Me.

2,251,351. **Making a Switch** by Placing against the Inner Surfaces of a Tubular Envelope of Cured Rubber a Pair of Opposed Contact Strips, Placing within the Envelope and between the Contact Strips a Core to Maintain the Strips in Spaced Relation, Placing the Envelope within a Mold together with Uncured Rubber Placed outside the Envelope, Applying Heat to the Mold to Cause the Uncured Rubber to Fuse with and Flow around the Envelope to Form a Rubber Housing, Then Removing the Housing from the Mold and Removing the Core. B. Cooper, Jersey City, N. J.

2,251,533. **Hosiery** Incorporating Elastic Yarn. P. L. Thurston and H. F. Hilker, both of Martinsburg, W. Va., assignors to Interwoven Stocking Co., New Brunswick, N. J.

2,251,650. **Rubber Thread or Tubing.** S. W. Alderfer, assignor of ½ to E. D. Andrews, both of Akron, O.

2,251,661. **Inflatable Deicer.** R. S. Colley, Kent, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,251,697. **Electrical Heating Pad** Comprising Resistance Wires Wound about a Core, the Wires Having Fibrous Glass Yarn Insulation and a Covering of a Latex Compound, and a Second Coating of Latex Compound Covering the Whole Pad. G. Van Daam, Buffalo, N. Y., and E. Stranszky, Erie, Pa., assignors to North American Electric Appliance Co., Inc., Buffalo, N. Y.

2,252,299. **Resilient Bushings.** W. C. McCoy, Shaker Heights, assignor to General Tire & Rubber Co., both of Akron, O.

2,252,758. **Diaphragms.** P. L. Clark, Jr., Glencoe, and C. Waterbury, Chicago, both in Ill.

2,253,067. **Production of Rubber Threads** Comprising Manufacturing a Dry Sheet From a Vulcanizable Rubber Mix and Passing It through a Cutting Device to Form the Rubber Threads; Superficially Vulcanizing the Threads by Keeping the Cutting Blades at a Temperature not below the Vulcanizing Temperature of the Rubber Mix. M. Draemann, Cologne-Deutz, Germany.

2,253,291. **Hollow Rotating Bodies** from Unvulcanized Rubber Sheets. R. Fraknoi, Matyasfold, assignor to Magyar Ruggyantaarugyar Reszvenytarsasag, Budapest, both in Hungary.

2,253,759. **Safety Tubes.** C. J. Burkley, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

2,253,922. **Adhesive Tape.** P. Van Cleef, assignor to Van Cleef Bros. (a partnership consisting of N., F., M., and P. Van Cleef) both of Chicago, Ill.

2,253,991. **Regeneration of Artificial and Synthetic Leather Wastes** Which Contain Rubber Comprising Subjecting the Disintegrated Wastes to a Mechanical Working in the Presence of a Chlorinated Acyclic Hydrocarbon Solvent. N. Strachovsky, assignor to Société Salpa Française, both of Paris, France.

Dominion of Canada

398,103. **Electric Blasting Initiator** with Leg Wires Embedded in Rubber. Canadian Industries Ltd., Montreal, P. Q., assignee of M. H. English, Pompton Lakes, N. J., and R. R. Nydegger, Wilmington, Del., co-inventors, both in the U. S. A.

398,419. **Plastic Sheet Stock** of a Vinyl Ester Resin; the Stock Being Homogeneous, of Uniform Strength, and Free from Bubbles or Entrapped Gases. Carbide & Carbon Chemicals Ltd., Toronto, Ont., assignee of L. M. Curries, Lakewood, and L. K. Merrill, Berea, co-inventors, both in O., U. S. A.

398,524. **Rubber Coating One Surface of a Fabric** by Depositing a Layer of Latex Composition upon the Surface and Setting the Aqueous Medium of the Latex Composition to a Gel Immediately upon Contact with the Surface to Prevent the Latex from Penetrating through to the Opposite Surface of the Fabric. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of A. W. Holmberg and R. R. Sterrett, co-inventors, both of Naugatuck, Conn., U. S. A.

MACHINERY

United States

2,250,740. **Tire Casing Spreader.** G. I. Anderson, assignor to Ke Hawke Mfg. Co., both of Minneapolis, Minn.

2,251,135. **Apparatus and Method for Forming Washers, Etc.** A. N. Iknayan and R. G. Null, both of Indianapolis, Ind., assignors to United States Rubber Co., New York, N. Y.

2,251,231. **Centrifugal Pump** for Latex. W. T. Runals, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,251,634. **Perforating Apparatus.** A. W. Phillips, Norristown, Pa., assignor to B. F. Goodrich Co., New York, N. Y.

2,251,803. **Tire Tester.** E. W. Pummill, Indianapolis, Ind.

2,251,904. **Tire Building Machine** with Inflatable Annuli Mounted at the Outer Sides of the Bead Seat. W. J. Breth, M. Engler, and H. T. Kraft, assignors to General Tire & Rubber Co., all of Akron, O.

2,252,214. **Feeding Means** for Elastic Yarn Knitting Machine. E. St. Pierre, Pawtucket, assignor to Hemphill Co., Central Falls, both of R. I.

2,252,345. **Coating Sheet Material.** S. J. Johnson, Portland, Me., assignor to S. D. Warren Co., Boston, Mass.

2,252,389. **Machine and Method for Making Rubber Thread** from a Film of Rubber. G. Vincke, assignor to H. H. Straus, both of New York, N. Y.

2,252,564. **Split-Foot Elastic Yarn Knitting Machine.** I. H. C. Green, Central Falls, and E. St. Pierre, Pawtucket, assignors to Hemphill Co., Central Falls, all in R. I.

2,252,637. **Knitting Machine** for Rubber Thread. J. Lawson, Bristol Highlands, R. I., assignor to Scott & Williams, Inc., Laconia, N. H.

2,253,477. **Apparatus to Fabricate Tubular Structures.** R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,253,603. **Tire Vulcanizing Matrix.** R. B. Battaglia, Lake Charles, La.

2,253,781. **Tire Building Apparatus** with a Series of Fixed Tire-Building Machines Arranged in Circular Formation and a Movable Annular Conveyer for Supplying Materials to the Machines. J. I. Haase, W. W. McMahan, and C. J. Roese, all of Akron, O., assignors to Wingfoot Corp., Wilmington, Del.

2,253,792. **Apparatus to Cure V-Belts.** W. H. Leavenworth, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

2,253,896. **Machine for Making Tire Casings.** C. H. Desautels, Springfield, Mass., assignor by mesne assignments, to United States Rubber Co., New York, N. Y.

CHEMICAL

United States

2,251,070. **Chewing Gum Material** Comprising a Polybasic Acid Modified Polyhydric Alcohol Ester of Hydrogenated Rosin. J. M. Schantz, assignor to Hercules Powder Co., both of Wilmington, Del.

2,251,220. **Rubber Cement** with Sufficient Nitro-Paraffin to Retard Vulcanized Gelling of the Cement on Standing and Less Than Is Required to Precipitate Rubber from the Cement. A. W. Campbell assignor to Commercial Solvents Corp., both of Terre Haute, Ind.

2,251,394. **Softening Crude Rubber** by Heating Rubber at at Least about 170° F. with a Small Proportion of Thianthrene. W. F. Busse, Akron, and E. N. Cunningham, Cuyahoga Falls, both in O., assignors to B. F. Goodrich Co., New York, N. Y.

2,251,459. **Preparing 2-Mercaptothiazoline** by the Reaction of 2-Chlorethylamine, an Alkali, and Carbon Disulphide. R. A. Mathes, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,251,486. **Coloring Vinylidene Chloride Polymers.** A. W. Hanson, assignor to Dow Chemical Co., both of Midland, Mich.

2,251,869-2,251,872. **Zinc Oxide Pigment** with a Zinc Phosphate Coating. D. L. Gamble and J. H. Haslam, both of Palmerton, Pa., assignors to New Jersey Zinc Co., New York, N. Y.

2,252,318. **Rubber-Sulphur Composition** Containing a Compound of Trivalent Arsenic (Arsenious Oxide, Sodium Arsenite, Zinc Arsenite, Aniline Arsenite or Arsenious Bromide) and a Zinc Compound (Zinc Oxide or Zinc Stearate). J. H. Gravell, Elkins Park, Pa.; E. Hoy Rishel, executor of J. H. Gravell, deceased, assignor to American Chemical Paint Co., a corporation of Del.

2,252,366. **Condensation Products** Containing Sulphur. W. Frost, assignor to Silesia Verein Chemischer Fabriken, both of Saarau, Kreis Schweidnitz, Germany.

2,252,728. **Chlorinated Rubber and a Method for Its Production.** J. M. Peterson, Kennett Square, Pa., assignor to Hercules Powder Co., Wilmington, Del.

2,253,137. **Synthetic Rubber-Like Resinous Composition** Comprising a Polyvinyl Halide Plasticized with an Ester of a Phenyl Alkyl Alcohol and an Aliphatic Dibasic Acid of the Class $C_nH_{2n-2}O_4$, Where—n—Is at Least 6. J. J. Russell, Schenectady, N. Y., assignor to General Electric Co., a corporation of N. Y.

2,253,138. **Electrical Cable Insulation** Comprising Rubber, Asphalt, a Reaction Product of Rubber and a Halogen Acid of Tin, and a Vulcanizing Agent. M. H. Savage, Bridgeport, and E. J. Butler, Stratford, both in Conn., assignors to General Electric Co., a corporation of N. Y.

2,253,551. **Preparing White Pigments** by Heating a Mixture of Anatase Titanium Dioxide and a Minor Amount of Zinc Oxide at a Temperature between above 840° C. and 1,100° C., until by X-Ray Examination the Presence of a Substantial Amount of Rutile Titanium Dioxide Can Be Detected. J. E. Booge, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

2,253,595. **Titanium Oxide Production** by Hydrolyzing a Titanium Salt Solution at an Elevated Temperature. H. J. Wood, Baltimore, Md., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

2,253,835. **Reactivation of Spent Hydrogenation Catalysts.** V. E. Wellman, Silver Lake, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,253,871. **Activation of Hydrogenation Catalysts** Contaminated with Organic Materials. W. L. Semon, Silver Lake, O., assignor to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

398,101. **Rubber Preservation.** Rubber Having Incorporated Therein a Small Amount of Acetone-Diphenylamine, and a Small Amount, Sufficient to Inhibit the Catalytic Effect of Copper, of Di-Salicylal Ethylene Diamine. Canadian Industries Ltd., Montreal, P. Q., assignee of F. B. Downing and C. J. Pedersen, both of Pennsgrove, N. J., and A. M. Neal, Wilmington, Del., all in the U. S. A.

398,102. **Rubber Preservation.** Rubber Having Incorporated Therein a Small Amount of Phenyl-b-Naphthylamine, and a Small Amount, Sufficient to Inhibit the Catalytic Effect of Copper, of Disalicylal-o-Phenylene Diamine. Canadian Industries Ltd., Montreal, P. Q., assignee of F. B. Downing and C. J. Pedersen, both of Pennsgrove, N. J., and A. M. Neal, Wilmington, Del., co-inventors, all in the U. S. A.

398,152. **Vulcanization Accelerator.** Vulcanized Rubber Product Obtained by Heating Rubber and Sulphur in the Presence of a Product Obtained by Reacting N-Benzyl Cyclohexylamine with Formaldehyde in the Ratio of Substantially Two Molecular Proportions of Amine and One of Formaldehyde and Further Reacting the Product So Obtained with Carbon Bisulphide. Monsanto Chemical Co., St. Louis, Mo., assignee of R. L. Sibley, Nitro, W. Va., both in the U. S. A.

398,438. **Bonding Rubber to Metal** by Applying to at Least One of the Surfaces to Be Bonded together a Fluid Medium Containing Rubber, a Compound of a Heavy Metal, and a Composition Adapted to Yield Free Halogen, Bringing the Surfaces into Contact, and Completing the Bond by the Application of Heat. Dunlop Tire & Rubber Goods Co. Ltd., Toronto, Ont., assignee of D. F. Twiss and F. A. Jones, co-inventors, both of Birmingham, Warwickshire, England.

398,513. **Rubber Filling and Economizing Agent** Produced by Refining a Petroleum Oil, Separating the Refined Oil from the Residue, and Treating the Residue to Recover Therefrom a Substantially Neutral Predominantly Hydrocarbon Material Boiling between 160 and 380° C at 12 mm. Hg. Wilmington Chemical Corp., Wilmington, Del., U. S. A., assignee of F. Rostler and V. Mehner, co-inventors, both of Vienna, Austria.

398,514. **Heat-Hardening Plastic Composition** Comprising the Condensation Product of a Mixture Containing, as Essential Ingredients, Formaldehyde, a Phenol Condensable Therewith to Form a Heat-Hardening Resin, and Unsaturated Hydrocarbons Capable of Condensation with Said Phenol and Formaldehyde and Having a Composition of Approximately 90% Carbon and 10% Hydrogen, Said Hydrocarbons Being Derived from Waste Products of Mineral Oil Refining. Wilmington Chemical Corp., assignee of F. Rostler and V. Mehner, all of Wilmington, Del., co-inventors with and assignees of L. Bornstein, Wilmington, Del.

United Kingdom

537,583. **Composite Materials** Made from Vinyl Resins. Carbide & Carbon Chemicals Corp.

537,645. **Preparation of Crude Rubber.** H. G. C. Fairweather, (B. F. Goodrich Co.).

537,680. **Polystyrene.** Soc. Des Usines Chimiques Rhone-Poulenc, E. Bachmann, J. Baud, and J. G. Favre.

537,744. **Thiazolinyl Sulphide Derivatives and Their Use as Vulcanization Accelerators.** W. Baird, F. S. Fowkes, G. E. Nettleship, and Imperial Chemical Industries, Ltd.

537,925. **Plasticizers.** E. Higgins.

537,982. **Latex Compound** Used in the Preservation of Certain Foods. L. W. H. Shearsby.

538,112. **Vulcanization Accelerators.** United States Rubber Co.

UNCLASSIFIED

United States

2,250,713. **Auxiliary Traction Device.** S. R. Johnson, Altamont, S. Dak.

2,251,063. **Resilient Wheel.** W. W. Little, National Park, N. J., assignor of 25% to S. M. Ives, New York, N. Y.

2,251,359. **High-Pressure Inner Tube Tester.** H. D. Kantner, Meadville, Pa., assignor to Pure Oil Co., Chicago, Ill.

2,251,713. **Tire-Pressure Equalizer and Inflater.** G. H. Meiser, Chicago, Ill.

2,251,715. **Tube Coupling** with Yieldable Ring. A. L. Parker, Cleveland, O.

2,252,112. **Tire Tool.** R. S. Worthington, Akron, assignor to Kennedy Service Tools Co., Mogadore, both in O.

2,252,194. **Wheel** for a Pneumatic Tire. B. L. Mills, assignor to Clark Equipment Co., both of Buchanan, Mich.

2,252,680. **Tire Pressure Indicator.** G. P. Lindholm, Minden, Nebr.

2,252,759. **Tire Chain** or Similar Device. F. W. Dodson, Madison, N. J.

2,252,778. **Tire Anti-Skid Chain.** C. A. Morss, West Hartford, Conn.

2,253,320. **Wheel.** L. B. Berg, assignor to Borg-Warner Corp., both of Chicago, Ill.

2,253,691. **Hose Clamp.** F. L. Darling, Hollywood, Calif., assignor to Wingfoot Corp., Wilmington, Del.

2,254,169. **Spark Plug.** J. H. Dillon, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,254,170. **Metals Having Radioactivity.** J. H. Dillon, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,254,171. **Radioactive Alloy.** J. H. Dillon, assignor to Firestone Tire & Rubber Co., both of Akron, O.

Dominion of Canada

397,738. **Tire Anti-Skid Device.** J. G. Hill, Franklin Township, Penn., U. S. A.

398,020. **Heat Insulating Material.** Union Asbestos & Rubber Co., Chicago, assignee of W. F. Astley, Cicero, both in Ill., U. S. A.

398,134. **Vehicle Wheel.** Firestone Tire & Rubber Co., assignee of W. S. Brink, both of Akron, O., U. S. A.

398,236. **Tire Pressure Indicating Means.** V. M. Pyatt, Great Falls, Mont., U. S. A.

398,662. **Tire Rim Construction.** C. H. Sauer, Chico, inventor, and T. R. Rooney, Atherton, assignee of ½ of the interest, both in Calif., U. S. A.

United Kingdom

537,219. **Cord** for Reenforcing Rubber Articles. Fisk Rubber Corp., and Hampton Co.

537,995. **Links for Endless-Traction Belts** for Vehicles. Firestone Tire & Rubber Co., Ltd.

TRADE MARKS

United States

388,734. **Per-fit.** Dress shields and shoulder straps. A. Stein & Co., Chicago, Ill.

388,737. **"The Isle of Safety."** Rubber and fiber heels and lifts. United States Rubber Co., New York, N. Y.

388,754. **Exylin.** Raincoats, capes, laboratory aprons, etc. McCoy, Jones & Co., Inc., Chicago, Ill.

388,780. **Aero-Seal.** Synthetic rubber packing. Chicago Belting Co., Chicago, Ill.

388,804. **Griplug.** Rubber soles and taps. Panther-Panco Rubber Co., Inc., Chelsea, Mass.

388,815. Representation of an oval containing the words: **"Ol' Reliable."** Game balls and sporting goods. Marshall-Wells Co., doing business as Ol' Reliable Sporting Goods Co., Duluth, Minn.

388,817. **Sue Abbot.** Clothing, shoes, etc. Bloomingdale Bros., Inc., New York, N. Y.

389,049. **Gardette.** Dress shields. W. Netzky, doing business as Susquehanna Waist Co., Philadelphia, Pa.

389,053. **Duchess.** Dress shields. I. B. Kleinert Rubber Co., New York, N. Y.

389,096. **Permoflex.** Elastic corset fabric. American Mills Co. of New York, New Haven, Conn., assignor to United Elastic Corp., Easthampton, Mass.

389,108. **Delac.** Vulcanization accelerators. United States Rubber Co., New York, N. Y.

389,112. **Firestone.** Refrigerators. Firestone Tire & Rubber Co., Akron, O.

389,113. **Plucks.** Absorbent cotton. Forest City Rubber Co., Cleveland, O.

389,132. **Pharis.** Tires and tubes. Pharis Tire & Rubber Co., Newark, O.

389,146. Representation of an oval beneath the word: **"Chums."** Chewing gum. J. L. Clark, doing business as J. L. Chicle Co., Pittsburgh, Pa.

389,148. Representation of two concentric rectangles containing the words: **"Parfait de nise."** Shoes. Franklin Simon & Co., Inc., New York, N. Y.

389,150. Representation of a rectangle containing the words: **"Parfait debs."** Footwear. Franklin Simon & Co., Inc., New York, N. Y.

389,151. **Craftsman.** Men's clothing, accessories including suspenders, etc. J. C. Penney Co., Wilmington, Del.

389,167. **Vibrosage.** Electric vibrators. Beauty Appliance Corp., Racine, Wis.

389,174. Representation of a diamond containing the word: **"Die-X-Pel."** Sponge rubber. Brown Rubber Co., Inc., Lafayette, Ind.

389,181. Representation of a man holding a black circle containing the words: **"Giant Gloves"** in white, and surrounding an arm and hand clasping a dumbell. Gloves. S. I. Gross, doing business as Giant Glove Co., New York, N. Y.

389,200. **Lady Lanco.** Shoes, raincoats, corsets, etc. Lansburgh & Bros., Washington, D. C.

389,201. Representation of a lighthouse and the words: **"Beacon Buk."** Suspenders, garters, belts, etc. Jacob Wechsler & Sons, Inc., New York, N. Y.

389,213. **Window-Fit.** Shoes. A. V. Ettelbrick, Casey, Ill.

389,216. **Stallo.** Fountain pens, erasers, stationer's supplies. B. Michaelis, doing business as Statolet Co., New York, N. Y.

389,229. **Coup Lette.** Foundation garments. Kabo Corset Co., Chicago, Ill.

389,236. **Casualets.** Shoes. Edison Bros. Stores, Inc., St. Louis, Mo.

389,240. **Perma•lift.** Foundation garments. A. Stein & Co., Chicago, Ill.

389,241. **Biased Power.** Foundation garments. La Resista Corset Co., Bridgeport, Conn.

389,253. **Vigor-Built.** Footwear. Chicago Mail Order Co., Chicago, Ill.

389,257. **Velvetread.** Mats. E. F. McClung, doing business as Royal Auto Products Co., Huntington Park, Calif.

389,258. **College Craft.** Clothing. F. H. Cohen, New York, N. Y.

389,264. **Per-fit.** Sanitary belts, etc. A. Stein & Co., Chicago, Ill.

389,265. **American Chief.** Tires. Mohawk Rubber Co., Akron, O.

389,273. **Harmony-Three.** Clothing. Bond Stores, Inc., New York, N. Y.

389,274. **Slipalette.** Corsets, etc. Edith Lances Brassieres, New York, N. Y.

389,302. **Adjust-U-Form.** Girdles. Sturm & Scheinberg, Inc., New York, N. Y.

389,304. **"Kelsey."** Clothing, shoes, foundation garments. Bonwit Teller, Inc., New York, N. Y.

389,306. **Gumtred.** Soles. Panther-Panco Rubber Co., Inc., Chelsea, Mass.

389,313. **Nev-R-Bulge.** Foundation garments. A. Cohen Brassieres, Inc., New York, N. Y.

389,353. Representation of a fanciful label containing the word: **"Chrotan."** Shoes. Endicott Johnson Corp., Endicott, N. Y.

389,355. **Slikerette.** Raincoats. M. C. Geilfus, Los Angeles, Calif.

Market Reviews

CRUDE RUBBER

Commodity Exchange

TABULATED WEEK-END CLOSING PRICES ON THE NEW YORK MARKET

Futures	July 26	Aug. 13*	Sept. 20
Sept.	23.00	22.47	22.35
Oct.	.....	.....	22.35
Dec.	22.45	22.41	22.35
Mar.	21.80	21.30	22.00
Volume per week (tons)	1,480	1,310	7,610

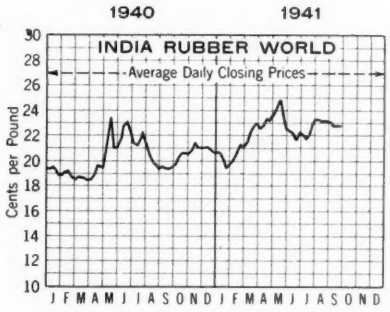
*Trading suspended from Aug. 14 to Sept. 14, 1941.

RESTRICTED to liquidation of open contracts, trading in crude rubber futures was resumed on Monday, September 15. No transactions above 22½¢ per pound were permitted, and the trading session was limited to two hours, from 11:00 a.m. to 1:00 p.m., daily except Saturday. The reopening of the market was ordered by the board of governors of the Commodity Exchange, Inc., on September 10, and it was announced after the board meeting that the 1,053 contracts remaining open will be liquidated in accordance with the by-laws and rules of the exchange. Leon Henderson, administrator of the Office of Price Administration, notified the exchange of his approval from Washington.

Liquidation of rubber futures proceeded heavily at first, and the number of open contracts was reduced from 1,053 to 409 by the trading of the first day. A slackening of pace was noted after this, however, and by September 25, there were 243 open contracts remaining for liquidation. December futures, which were 22.41¢ per pound on August 13, the day trading was suspended, closed at 22.25¢ per pound on September 15, the day trading was resumed. On the second day the price strengthened to reach 22.40¢ per pound, and then the market advanced slightly to close at 22.45¢ per pound on September 26.

Of the 144,652,919 pounds of rubber imported by the United States during June, 23,981,188 pounds, or 16.6%, entered through the customs districts of Los Angeles and San Francisco, as against 9.4% during May, according to the United States Department of Commerce.

Crude rubber exports from producing countries in the restriction plan of the International Rubber Regulation Committee, excluding French Indo-China and Thailand, totaled 112,829 tons in June, against 113,320 tons in May, according to the Commodity Exchange. Permissible exports for June were 124,917 tons. Shipments during the first half of 1941 fell short of the permissible export quota by 69,630 tons, with principal deficiencies as follows: Netherlands India, 29,775 tons; British Malaya, 22,194 tons; and Ceylon, 13,049 tons. World shipments totaled 738,575 tons during this period, against 671,346 tons during the corresponding months of 1940. World absorption was placed at 605,678 tons during the first half of 1941, against 586,620 tons during the same period last year.



New York Outside Market—Spot No. 1-X Ribbed Smoked Sheets

New York Outside Market Rubber Quotations

	Sept. 25, 1940	Aug. 26, 1941	Sept. 25, 1941
	(Dollars and Cents)		
Latex			
Normal and concentrated (solid content) ....*lb.*	.234/.237	.2755/.29	.2755/.29
Paras			
Upriver fine....*lb.*	.15¾	.31¾	.29
Upriver fine....*lb*	*.18	*.35½	*.31½
Upriver coarse.*lb.*	.11	.16	.15
Upriver coarse.*lb*	*.15¼	*.23	*.22
Islands fine....*lb.*	.15	.30	.28
Islands fine....*lb.*	*.17½	*.35	*.30
Acre, Bolivian fine .....*lb.*	.15¾	.32	.29½
Acre, Bolivian fine .....*lb.*	*.18¼	*.36	*.32
Beni, Bolivian fine .....*lb.*	.17½	33	.30½
Madeira fine...*lb.*	.15½	.32	.29
Caucho			
Upper ball.....*lb.*	.11	.16	.15
Upper ball.....*lb.*	*.15¼	*.23	*.22
Lower ball.....*lb.*	.10	.15	.14
Pontianak			
Pressed block..*lb.*	.19/.22	.22/.32	.22/.29
Guayule			
Ampar .....*lb.*	.15½	.16½	.16½
Africans			
Rio Nuñez .. *lb.*	.18½	.18	.18
Black Kassai...*lb.*	.18½	.18	.18
Prime Niger flake .....*lb.*	.22½	.28	.28
Gutta Percha			
Gutta Siak ....*lb.*	.19½	.26	.25
Gutta Soh .....*lb.*	.28	.29	.29
Red Macassar..*lb.*	1.20	1.35	1.35
Balata			
Block Ciudad Bolivar .....*lb.*	.45	.47	.47
Manaos block..*lb.*	.52	.47	.47
Surinam sheets.*lb.*	.48	.50	.50
Amber .....*lb.*	.50	.52	.52

* Washed and dried crepe. Shipments from Brazil.

New York Outside Market

The spot market continued dull in September, and most of the activity was the result of dealer-to-dealer transactions. Buyers and sellers did little business, waiting for concrete results from the conferences in Washington. The Rubber Reserve Co. has not as yet released the minimum service charges to factories, although the price differentials on the various off-grades of rubber were issued on September 13, and the prices are listed on page 58 of this issue. After maintaining a price of 23⅛¢ per pound since August 11, the price of No. 1-X ribbed smoked sheets dropped to 22¾¢ per pound on September 4, holding that position for the balance of the month.

Rubber and Canvas Footwear Statistics

	Thousands of Pairs		
	Inventory	Production	Shipments
1938	16,183	50,812	54,942
1939	16,388	60,612	60,377
1940	11,129	57,278	62,480
1941			
Jan.	10,377	5,939	6,614
Feb.	10,754	5,543	5,166
Mar.	11,222	5,827	5,359
Apr.	12,272	6,628	5,555
May	13,223	6,084	5,134
June	13,834	6,278	5,668
July	12,256	4,789	6,366

The above figures have been adjusted to represent 100% of the industry based on reports received which represented 81% for 1936-37.

Source: *Survey of Current Business*, Bureau of Foreign & Domestic Commerce, Washington, D. C.

New York Outside Market—Spot Closing Prices—Plantation Grades—Cents per Pound

	August, 1941						September, 1941												
	25	26	27	28	29	30†	1*	2	3	4	5	6†	8	9	10	11	12	13†	15
No. 1-X R.S.S. in cases ...	23⅛	23⅛	23⅛	23⅛	23⅛	..	..	23⅛	23⅛	22¾	22¾	..	22¾	22¾	22¾	22¾	22¾	..	22¾
No. 1 Thin Latex Crepe....	24⅜	24⅜	24⅜	24⅜	24⅜	..	..	24¾	24⅜	24⅛	24⅛	..	24⅛	24⅛	24⅛	24⅛	24⅛	..	24⅛
No. 2 Thick Latex Crepe ...	24⅜	24⅜	24⅜	24⅜	24⅜	..	..	24⅜	24⅜	24⅛	24⅛	..	24⅛	24⅛	24⅛	24⅛	24⅛	..	24⅛
No. 1 Brown Crepe.....	21¾	21¾	21¾	21¾	21¾	..	..	21¾	21¾	21¼	21¼	..	21¼	21¼	21¼	21¼	21¼	..	21¼
No. 2 Brown Crepe.....	21½	21½	21½	21½	21½	..	..	21½	21½	21	21	..	21	21	21	21	21	..	21
No. 2 Amber	21¾	21¾	21¾	21¾	21¾	..	..	21¾	21¾	21¼	21¼	..	21¼	21¼	21¼	21¼	21¼	..	21¼
No. 3 Amber	21½	21½	21½	21½	21½	..	..	21½	21½	21	21	..	21	21	21	21	21	..	21
Rolled Brown	20⅛	20⅛	20⅛	20⅛	20⅛	..	..	20⅛	20⅛	18¾	18¾	..	18¾	18¾	18¾	18¾	18¾	..	18¾

	September, 1941						
	16	17	18	19	20†		
No. 1-X R.S.S. in cases ...	22¾	22¾	22¾	22¾	22¾	..	
No. 1 Thin Latex Crepe....	24⅛	24⅛	24⅛	24⅛	24⅛	..	
No. 2 Thick Latex Crepe ...	24⅛	24⅛	24⅛	24⅛	24⅛	..	
No. 1 Brown Crepe.....	21¼	21¼	21¼	21¼	21¼	..	
No. 2 Brown Crepe.....	21	21	21	21	..	..	
No. 2 Amber	21¼	21¼	21¼	21¼	21¼	..	
No. 3 Amber	21	21	21	21	..	..	
Rolled Brown	18¾	18¾	18¾	18¾	18¾	..	

* Holiday. †Closed.

RECLAIMED RUBBER

ACCORDING to R. M. A. figures, August reclaimed rubber consumption is estimated at 20,864 long tons, 4% below the July figure; production, 24,065 long tons; and stocks on hand August 31, 39,052 long tons. The demand for reclaimed rubber during September was reported heavy from all consuming lines, and production held at capacity levels. Reclaimed rubber consumption has not dropped appreciably despite the sharp curtailment in crude rubber consumption; evidence of this is seen in the high August percentage of reclaim to crude consumed, 37.7%.

Prices remain unchanged.

New York Quotations

September 22, 1941

	Sp. Grav.	¢ per lb.
Auto Tire		
Black Select	1.16-1.18	6½/ 6¾
Acid	1.18-1.22	7½/ 7¾
Shoe		
Standard	1.56-1.60	7 / 7¼
Tubes		
Black	1.14-1.26	11¼/11½
Gray	1.15-1.26	12½/13¼
Red	1.15-1.30	12 /12¾
Miscellaneous		
Mechanical blends	1.25-1.50	4½/ 5½
White	1.35-1.50	13½/14½

The above list includes those items or classes only that determine the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

United States Reclaimed Rubber Statistics—Long Tons

Year	Production†	Consumption†	Consumption % of Crude	U. S. Stocks*†	Exports
1939	186,000	170,000	28.7	25,250	12,611
1940	208,971	190,244	29.3	32,636	11,347
1941					
Jan.	20,413	19,086	28.9	33,380	557
Feb.	19,507	18,222	29.1	33,654	1,009
Mar.	22,006	19,611	28.4	35,028	1,002
Apr.	21,574	20,427	28.6	35,336	....
May	22,775	21,405	30.0	35,871	....
June	23,790	22,559	26.5	36,265	....
July	23,111	21,725	31.8	36,751	....
Aug.	24,065	20,864	37.7	39,052	....

*Stocks on hand the last of the month or year. †Corrected to 100% from estimates of reported coverage. *Compiled by The Rubber Manufacturers Association, Inc.*

IMPORTS, CONSUMPTION, AND STOCKS

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks—Long Tons

Twelve Months	U.S. Imports*	U.S. Consumption¶	U.S. Stocks Mfrs., Dealers, Importers, Etc.†¶	U.S. Stocks Afloat	U.K.—Public Warehouses London, Liverpool†‡	Singapore and Penang Dealers and Port Stocks†‡	World Net Exports‡	World Absorption‡c	World Stocks†‡§
1939	409,616	592,000	125,800	91,095	44,917a	15,299	988,600	1,112,383	447,666a
1940	818,624	648,500	288,864	145,950	.....	26,773	1,392,586	1,099,564	.....
1941									
Jan.	86,833	65,989	309,411b	153,169b	.....	37,145	151,060	101,829	.....
Feb.	73,973	62,692	320,372b	136,955b	.....	46,913	97,522	90,016	.....
Mar.	87,123	69,024	338,147b	140,228b	.....	41,005	130,395	104,790	.....
Apr.	63,305	71,374	329,767b	153,484b	.....	42,085	119,855	103,151	.....
May	101,404	71,365	359,234b	147,454b	.....	44,610	122,487	99,943	.....
June	64,577	84,912	339,108b	175,499b	.....	43,263	124,691	116,112	.....
July	97,081	68,653	395,216b	132,304b	.....	41,534	133,116	104,353	.....
Aug.	105,456	55,365	444,890b	90,591b	.....	.....	.....	.....	.....

*Including liquid latex. †Stocks on hand the last of the month or year. ‡*Statistical Bulletin of the International Rubber Regulation Committee.* §Stocks at U. S. A., U. K., Singapore and Penang, Para, Manaos, regulated areas, and afloat. ¶Corrected to 100% from estimate of reported coverage. aStocks as of Aug. 31, 1939. bIncludes government emergency rubber. cIncluding producing countries.

AUGUST crude rubber consumption by domestic rubber manufacturers was 55,365 long tons, 19.4% under July, but 3.9% above consumption in August, 1940, according to the R.M.A.

Gross imports for August totaled 105,456 long tons, an all-time high, according to the Department of Commerce, and were 8.6% above July and 44.4% over August, 1940, imports.

Imports during July were valued at $45,083,933, resulting in an average value per pound of 19.09¢. This represents an increase of more than ½¢ from July and 1½¢ from August, 1940.

Total domestic stocks August 31, including government reserves, totaled 444,890 long tons, 12.6% above July 31 and 128.4% over August 31, 1940, stocks.

The Department also reported that stocks in the hands of the United States Government August 31 were 228,551 long tons, an increase of over 9,707 tons over July. This left 95,749 tons of the August imports for trade stocks and consumption.

Stocks afloat for U. S. ports August 31 were 90,591 long tons.

United States Latex Imports

Year	Pounds (d.r.c.)	Value
1939	61,460,003	$10,467,552
1940	75,315,775	14,543,975
1941		
Jan.	4,892,860	1,019,741
Feb.	6,598,930	1,279,648
Mar.	3,822,583	774,225
Apr.	3,570,742	648,217
May	5,895,381	1,117,226
June	4,637,095	936,944

Data from United States Department of Commerce, Washington, D. C.

RUBBER SCRAP

THE demand for all types of scrap continues heavy, and collections were reported normal last month. The government is making every effort to maintain a free flow of waste materials, including scrap rubber, as indicated elsewhere in this issue. The market remains essentially unchanged, with price revisions on only two grades, No. 2 compound tubes and mixed tubes.

Consumers' Buying Prices

(Carlot Lots for September 23, 1941)

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01⅝/$0.01¾
Colored	lb.	.01¾/ .01⅞
Untrimmed arctics	lb.	.01¼/ .01⅜
Inner Tubes		
No. 1, floating	lb.	.12 / .14
No. 2, compound	lb.	.07½/ .07¼
Red	lb	.07⅜/ .07⅝
Mixed tubes	lb.	.06⅜/ .06½
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	17.50 /18.50
Beadless	ton	23.50 /24.00
Auto tire carcass	ton	55.00 /60.00
Black auto peelings	ton	54.00 /55.00
Solid		
Clean mixed truck	ton	40.00 /44.00
Light gravity	ton	50.00 /52.00
Mechanicals		
Mixed black scrap	ton	33.00 /34.00
Hose, air brake	ton	29.00 /30.00
Garden, rubber covered	ton	12.00 /14.00
Steam and water, soft	ton	12.00 /14.00
No. 1 red	lb.	.04¾/ .05
No. 2 red	lb.	.03½/ .04
White druggists' sundries	lb.	.04 / .04½
Mixed mechanicals	lb.	.02¾/ .03
White mechanicals	lb.	.04¼/ .04½
Hard Rubber		
No. 1 hard rubber	lb.	.16 / .17

New Incorporations

Hawthorne Scrap Rubber Co., Inc., 3244 W. 31st St., Chicago, Ill. Capital 250 common shares, par value $40 a share. H. Teitelbaum and A. and J. Kratish. Scrap tires and tubes.

Hurlston Parker Rubber Corp., Queens, N. Y. Capital 100 shares, no par value. Sherman & Sterling, 55 Wall St., New York, N. Y. Rubber products.

Keaton Rubber Co., 128 Market St., Newark, N. J. Capital 1,000 shares, no par value. M. Rogow, 128 Market St., Newark; L. Banks, 749 Communipaw Ave., Jersey City, N. J.; and G. F. Connelly, 120 Cabrini Blvd., New York, N. Y. Manufacture rubber products of various kinds.

The Kisbet Products, Inc., Bridgeport, Conn. Capital $30,000. H. L. Schine, H. L. Cohen, and J. Hesse. Produce heavy-duty rubber brushes for industrial and hospital use.

Transcontinental Rubber Corp., New York. Capital 100 shares preferred and 100 shares, no par value. H. Berlack, 1 Wall St., New York, N. Y. Rubber goods.

COMPOUNDING INGREDIENTS

THE position of the compounding ingredients market remains essentially unchanged. Tightness in the supplies of certain materials continues, and manufacturers are forced to allocate sales. The curtailment in crude rubber consumption has not apparently affected the demand for these materials appreciably. Prices in general are steady.

CARBON BLACK. Demand generally continues heavy although there are some signs of a slight decrease, presumably because of the rubber curtailment program. Shipments continue in excess of production. According to producers' inventories, stocks totaled 123,000,000 pounds on September 1, against 129,000,000 pounds on August 1, and 150,000,000 pounds on September 1, 1940. Production in July and in August was placed at 41,000,000 pounds monthly, although shipments rose from 36,000,000 pounds in July to 47,000,000 pounds in August. During the first half year of 1941 exports declined to 64,243,000 pounds, a drop of 39.8% from the corresponding period last year. Prices are unchanged.

FACTICE OR RUBBER SUBSTITUTE. Demand continues heavy. Prices of certain grades of substitute advanced.

LITHARGE. Demand remains heavy although a slight let-up is reported. Exports during the first half year of 1941 totaled 2,529,000 pounds, an increase of 51% above the first six months of 1940. Prices are steady.

LITHOPONE. The market is unchanged with manufacturers continuing to allocate sales. Prices are steady and unchanged.

RUBBER CHEMICALS. Demand continued at a high level, exceeding substantially that during the same period a year ago. The market is firm, with quotations in general unchanged.

RUBBER SOLVENTS. Rubber tire manufacturers ordered heavily, continuing the strong demand. Prices advanced ½¢ per gallon for tank cars at New York.

TITANIUM PIGMENTS. Demand continues to outpace supplies, with manufacturers allocating sales. Exports in the first six months of 1941 totaled 9,103,000 pounds, an increase of 71% over the corresponding period of 1940. Prices continue steady.

ZINC OXIDES. As with titanium pigments, supplies are exceeded by demand, and sales are allocated with priority customers receiving preference. Rubber companies, in general, are said to be obtaining most of their requirements. Exports during the first half of 1941 totaled 6,998,000 pounds, an increase of 91% over the same period last year. Prices are firm and unchanged.

Current Quotations*

Abrasives

Pumicestone, powdered	lb.	$0.04 /$0.045
Rottenstone, domestic	lb.	.025 / .03

*Prices in general are f.o.b. works. Range indicates grade or quantity variations. Space limitation prevents listing of known ingredients. Requests for information not recorded will receive prompt attention.

Accelerators, Inorganic

Lime, hydrated, *l.c.l.*, New York	ton	$25.00
Litharge (commercial)	lb.	.0825/$0.09

Accelerators, Organic

A-1	lb.	.26 / .35
A-10	lb.	.34 / .40
A-19	lb.	.52 / .65
A-32	lb.	.70 / .80
A-77	lb.	.42 / .55
A-100	lb.	.42 / .55
Accelerator 49	lb.	.41 / .42
531	lb.	.48 / .50
737	lb.	.42 / .43
737-50	lb.	.25 / .26
808	lb.	.70 / .72
833	lb.	1.15
Acrin	lb.	.60
Aldehyde ammonia	lb.	.65 / .70
Altax	lb.	.55 / .60
B-J-F	lb.	.50 / .55
Beutene	lb.	.70 / .75
Butyl Eight	lb.	.98 / 1.00
C-P-B	lb.	2.00
Captax	lb.	.50
Crylene	lb.	
Paste	lb.	
D-B-A	lb.	2.00
Delac A	lb.	.40 / .50
O	lb.	.40 / .50
P	lb.	.40 / .50
Di-Esterex-N	lb.	.60 / .70
DOTG (Di-ortho-tolyguanidine)	lb.	.44 / .46
DPG (Diphenylguanidine)	lb.	.35 / .45
El-Sixty	lb.	.50 / .65
Ethylideneaniline	lb.	.42 / .43
Formaldehyde P.A.C	lb.	.06
Formaldehyde-para-toluidine	lb.	.57 / .59
Formaniline	lb.	.31 / .32
Guantal	lb.	.40 / .50
Hepteen	lb.	.35 / .40
Base	lb.	1.35 / 1.50
Hexamethylenetetramine U.S.P.	lb.	.39
Technical	lb.	.33
Lead oleate, No. 999	lb.	.145
Witco	lb.	.15
Ledate	lb.	1.50
Monex	lb.	1.75
Novex	lb.	
O-X-A-F	lb.	.50 / .55
Oxynone	lb.	.77 / .90
Para-nitroso-dimethylaniline	lb.	.85
Pentex	lb.	1.00 / 1.10
Flour	lb.	.15 / .16
O	lb.	
Flour	lb.	
Phenex	lb.	.50 / .55
Pip-Pip	lb.	1.90
R & H 50-D	lb.	.42 / .43
Rotax	lb.	.60 / .65
Safex	lb.	1.20 / 1.30
Santocure	lb.	.80 / 1.00
Selenac	lb.	2.00
SPDX	lb.	.70 / .75
A	lb.	.70 / .75
Super sulphur No. 2	lb.	.14 / .16
Tetrone A	lb.	2.20
Thiocarbanilide	lb.	.26 / .35
Thionex	lb.	1.75
Thiurad	lb.	1.75
Trimene	lb.	.55 / .65
Base	lb.	1.05 / 1.20
Triphenylguanidine (TPG)	lb.	.45
Tuads, Methyl	lb.	1.55
2-MT	lb.	.54
Ulto	lb.	1.25 / 1.50
Ureka	lb.	.60 / .75
Blend B	lb.	.60 / .75
C	lb.	.56 / .65
Vulcanex	lb	.42 / .43
Vulcanol	lb.	.85
Z-B-X	lb.	2.50
Zenite	lb.	.46 / 48
A	lb.	.53 / .55
B	lb.	.46 / .48
Zimate, Butyl	lb.	1.15
Ethyl	lb.	1.15
Methyl	lb.	1.25

Activators

Aero Ac 50	lb.	.46 / .52
Barak	lb.	.50
MODX	lb.	.30 / .35
SL No. 20	lb.	.085 / .10

Age Resisters

AgeRite Alba	lb.	2.00
Gel	lb.	.57 / .59
Hipar	lb	.65 / .67
Powder	lb.	.52 / .54
Resin	lb.	.52 / .54
D	lb.	.52 / .54
White	lb.	1.25 / 1.40
Akroflex C	lb.	.56 / .58
Albasan	lb.	.70 / .75
Aminox	lb.	.52 / .61
Antox	lb.	.56
Betanox	lb.	.52 / .61
Special	lb.	.65 / .74
B-L-E	lb.	$0.52 /$0.61
Powder	lb.	.65 / .74
B-X-A	lb.	.52 / .61
Copper Inhibitor X-872-A	lb.	1.15
Flectol B	lb.	.52 / .65
H	lb.	.52 / .65
White	lb.	.90 / 1.15
M-U-F	lb.	1.50
Neozone (standard)	lb.	.63
A	lb.	.52 / .54
B	lb.	.63
C	lb.	.52 / .54
D	lb.	.52 / .54
E	lb.	.63
Oxynone	lb.	.77 / .90
Parazone	lb.	.68
Permalux	lb.	1.20
Santoflex B	lb.	.52 / .65
BX	lb.	.58 / .71
Santovar A	lb.	1.15 / 1.40
Solux	lb.	1.30
Stabilite	lb.	.52 / .54
Alba	lb.	.70 / .75
Thermoflex	lb.	1.20 / 1.15
A	lb.	.65 / .67
Tysonite	lb.	.16 / .165
V-G-B	lb.	.52 / .61

Alkalies

Caustic soda, flake, Columbia (400-*lb. drums*)	100 lbs.	2.70 / 3.55
liquid, 50%	100 lbs.	1.95
solid (700-*lb. drums*)	100 lbs.	2.30 / 3.15

Antiscorch Materials

A-F-B	lb.	.35 / .40
Antiscorch T	lb.	.90
Cumar RH	lb.	.10
E-S-E-N	lb.	.35 / .40
R-17 Resin (*drums*)	lb.	.105
RM	lb.	1.25
Retarder W	lb.	.36
Retardex	lb.	.45 / .48
U-T-B	lb.	.35 / .40

Antiseptics

Compound G-4	lb.	
G-11	lb.	

Antisun Materials

Heliozone	lb.	.23 / .24
S.C.R.	lb.	.33 / .35
Sunproof	lb.	.23 / .28
Jr.	lb.	.165 / .215

Blowing Agents

Ammonium Carbonate, lumps (500-*lb. drums*)	lb.	
Unicel	lb.	.50

Brake Lining Saturant

B.R.T. No. 3	lb.	.0165/ .0175

Colors

Black

Du Pont powder	lb.	.42 / .44
Lampblack (commercial), *l.c.l.*	lb.	.15

Blue

Du Pont Dispersed	lb.	.83 / 3.95
Powders	lb.	2.25 / 3.75
Heliogen BKA	lb.	
Toners	lb.	

Brown

Mapico	lb.	.11

Green

Chrome	lb.	.25
oxide (*freight allowed*)	lb.	.24
Du Pont Dispersed	lb.	.98 / 2.85
Powders	lb.	1.00 / 5.50
Guignet's (*bbls.*)	lb.	.70
Toners	lb.	

Orange

Du Pont Dispersed	lb.	.88 / 2.00
Powders	lb.	.88 / 2.75
Toners	lb.	

Orchid

Toners	lb.	

Pink

Toners	lb.	

Purple

Toners	lb.	

Red

Antimony Crimson, 15/17%	lb.	
R. M. P. No. 3	lb.	.48
Sulphur free	lb.	
R.M.P.	lb.	.52
Golden 15/17%	lb.	
7-A	lb.	.37
Z-2	lb.	.23
Cadmium, light (400-*lb. bbls.*)	lb.	.80 / .85
Du Pont Dispersed	lb.	.93 / 2.05
Powders	lb.	.285 / 1.65
Iron Oxide, *l.c.l.*	lb.	
Mapico	lb.	.0975
Rub-Er-Red (*bbls.*)	lb.	.0975
Toners	lb.	

White

Lithopone (*bags*)	lb.	$0.0385/	$0.0410
Albalith	lb.	.0385/	.0410
Astrolith (50-lb. *bags*)	lb.	.0385/	.0410
Azolith	lb.	.0385/	.0410
Titanium Pigments			
Ray-bar	lb.	.055 /	.065
Ray-cal	lb.	.0525/	.0625
Rayox	lb.	.135 /	.165
Titanolith (50-lb. *bags*)	lb.	.0525/	.055
Titanox-A	lb.	.145 /	.175
B	lb.	.0575/	.0625
30	lb.	.0575/	.0625
C	lb.	.055 /	.06
M	lb.	.0575/	.0625
Ti-Tone	lb.		
Zopaque (50-lb. *bags*)	lb.	.145 /	.1475
Zinc Oxide			
Azo ZZZ-11	lb.	.065 /	.0675
44	lb.	.065 /	.0675
55	lb.	.065 /	.0675
66	lb.	.08 /	.0825
French Process, Florence			
Green Seal-8	lb.	.0825/	.0850
Red Seal-9	lb.	.0775/	.08
White Seal-7	lb.	.0875/	.09
Kadox, Black Label-15	lb.	.065 /	.0675
No. 25	lb.	.0775/	.08
Red Label-17	lb.	.065 /	.0675
Horse Head Special 3	lb.	.065 /	.0675
XX Red-4	lb.	.065 /	.0675
23	lb.	.065 /	.0675
72	lb.	.065 /	.0675
78	lb.	.065 /	.0675
80	lb.	.065 /	.0675
103	lb.	.065 /	.0675
110	lb	.065 /	.0675
St. Joe (lead free)			
Black Label	lb.	.065 /	.0675
Green Label	lb.	.065 /	.0675
Red Label	lb.	.065 /	.0675
U.S.P	lb.	.0975/	.10
Zinc Sulphide Pigments			
Cryptone-BA-19	lb.	.0525/	.055
BT	lb.	.0525/	.055
CB	lb.	.0525/	.055
MS	lb.	.055 /	.0575
ZS No. 20	lb.	.0775/	.08
86	lb.	.0775/	.08
230	lb.	.0775/	.08
800	lb.	.0775/	.08
Sunolith	lb.	.0385/	.0410

Yellow

Cadmolith (cadmium yellow), (400-lb. *bbls.*)	lb.	.55 /	.60
Du Pont Dispersed	lb.	1.25 /	**1.75**
Powders	lb.	.145 /	1.37
Mapico	lb.	.0725	
Toners	lb.		

Dispersing Agents

Bardex	lb.	.0395/	.042
Bardol	lb.	.0225/	.025
Daryan No. 1	lb.	.30 /	.34
No. 2	lb.	.30 /	.34
Nevoll (*drums, c.l.*)	lb.	.0240	
Santomerse S	lb.	.11 /	.25

Fillers, Inert

Asbestine, *c.l.*	ton	15.00	
Barytes	ton	40.00	
f.o.b., St. Louis (50-lb. *paper bags*)	ton	23.05	
off color, domestic	ton	21.50	/26.50
white, imported	ton		
Blanc fixe, dry, precip.	lb.	.0325/	.035
Calcene	ton	37.50	/43.00
Infusorial earth	lb.	.025 /	.03
Kalite No. 1	ton	26.00	
3	ton	36.00	
Kalvan	ton	100.00	
Magnesia, calcined, heavy	lb.		
Magnesium Carbonate, *l.c.l.*	lb.	.0725/	.095
Paradene No. 2 (*drums*)	lb.	.05	
Pyrax A	ton	7.00	
Whiting			
Columbia Filler	ton	9.00	/14.00
Suprex, white extra light	ton	30.00	
heavy	ton	30.00	
Witco, *c.l.*	ton	8.00	

Finishes

Black-Out (surface protective)	gal.	4.00 /	5.00
Mica, *l.c.l.*	ton		
Rubber lacquer, clear	gal.	1.00 /	2.00
colored	gal.	2.00 /	3.50
Shoe Varnish	gal.	1.45	
Talc	ton	.025 /	.035

Flock

Cotton flock, dark	lb.	.09 /	.11
dyed	lb.	.40 /	.80
white	lb.	.12 /	.20
Rayon flock, colored	lb.	1.00 /	1.50
white	lb.	.75 /	1.00

Latex Compounding Ingredients

A-342	lb.	**1.00** /	**1.25**
Accelerator 85	lb.	.35	
89	lb.	1.20	
122	lb.	1.30	
552	lb.	1.90	
Aerosol OT Aqueous 10%	lb.	.125	
Antox, dispersed	lb.	**.42**	
Aquarex D	lb.	.75	
F	lb.	**.85**	
Areskap No. 50	lb.	$0.18	/$0.24
100, dry	lb.	.39 /	.51
Aresket No. 240	lb.	.16 /	.22
300, dry	lb.	.42 /	.50
Aresklene No. 375	lb.	.35 /	.50
400, dry	lb.	.51 /	.65
Black No. 25, dispersed	lb.	.22 /	.40
Casein	lb.		
Collocarb	lb.	.07	
Color Pastes, dispersed	lb.	.38 /	1.90
Copper Inhibitor X-872	lb.	2.25	
Dispersex No. 15	lb.	.11 /	.12
No. 20	lb.	.08 /	.10
Factex Dispersion A	lb.	.16	
Heliozone, dispersed	lb.	.25	
Igepon A	lb.		
Latac	lb.	2.50	
MICRONEX, Colloidal	lb.	.06 /	07
Nekal BX (dry)	lb.		
Pipsol X	lb.	3.05 /	**3.55**
R-2 Crystals	lb.	2.50 /	**2.75**
RN-2 Crystals	lb.	1.90 /	2.15
S-1 (400-lb. *drums*)	lb.	.65	
Santobrite Briquettes	lb.		
Powder	lb.		
Santomerse D	lb.	.41 /	.65
S	lb.	.11 /	.25
Stablex A	lb.	.90 /	1.10
B	lb.	.65 /	**.90**
C	lb.	.40 /	**.50**
Sulphur, dispersed	lb.	.10 /	**.15**
No. 2	lb.	.08 /	.12
T-1 (440-lb. *drums*)	lb.	.40	
Tepidone	lb.	.90	
Vulcan Colors	lb.		
Zenite Special	lb.	.55	
Zinc oxide, dispersed	lb.	**.12** /	**.15**

Mineral Rubber

Black Diamond, *l.c.*	ton	25.00	/27.00
B.R.C. No. 20	lb.	.009 /	.01
Hydrocarbon, hard	ton	25.00	**/27.00**
Genasco Hydrocarbon, granulated	ton		
solid	ton		
Gilsonite	ton		
Parmr	ton	25.00	**/29.00**
Pioneer, *c.l.*	lb.	25.00	/27.00
285°-300°	ton	25.00	**/27.00**

Mold Lubricants

Aluminum Stearate	lb.	**.21** /	**.22**
Aquarex D	lb.	.75	
WA Paste	lb.	.25	
Lubrex	lb.	.25 /	**.30**
Mold Paste	lb.	**.12** /	**.18**
Rubber-Glo, conc. regular	gal.	.94 /	1.15
Type W	gal.	.99 /	**1.20**
Sericite	ton	65.00	/75.00
Soapstone, *l.c.l.*	ton	25.00	/35.00

Oil Resistant

A-X-F	lb.	.82 /	.85

Reclaiming Oils

B.R.V	lb.	.032 /	.0345
No. 1621	lb.	.019 /	.02
S.R.O.	lb.	.019 /	.02
X-159	gal.	.20 /	.32
Rox No. 1	lb.	.0225/	.025

Reenforcers

Carbon Black		
Aerfloted Arrow Specification (*bags only*)	lb.	.0335†
Arrow Compact Granulized	lb.	.0335†
Certified Heavy Compressed (*bags only*)	lb.	.0335†
Spheron	lb.	.0335†
Continental, dustless	lb.	.0335†
Compressed (*bags only*)	lb.	.0335†
Disperso	lb.	.0335†
Dixie	lb.	.0335†
Dixiedensed	lb.	.0335†
66	lb.	.0335†
Excello, dustless	lb.	.0335†
Furnex	lb.	.03
Beads	lb.	.03
Gastex	lb.	.03 / .07
Kosmobile	lb.	.0335†
66	lb.	.0335†
Kosmos	lb.	.0335†
MICRONEX Beads	lb.	.0335†
Mark II	lb.	.0335
Standard	lb.	.0335
W-5	lb.	.0335
W-6	lb.	.0335
P-33	lb.	.0475
Pelletex	lb.	.03 / .07
Supreme, dustless	lb.	.0335†
Thermax	lb.	.0225
Velvetex	lb.	.04 / .06
"WYEX BLACK"	lb.	.0335†
Carbonex Flakes	lb.	.029 / .034
S	lb.	.03 / .0350
Clays		
Aerfloted Paragon (50-lb. *bags*)	ton	10.00
Suprex (50-lb. *bags*)	ton	10.00
Barden	ton	10.00
Catalpo, *c.l.*	ton	30.00
Clay "L"	ton	
Chicora	ton	$10.00
China	ton	22.50
Crown	ton	10.00
Dixie	ton	10.00
Hi-White	ton	10.00
Langford	ton	7.50
McNamee	ton	10.00
Par	ton	10.00
Paraforce, *c.l.*	ton	50.00
Witco, *c.l.*	ton	10.00
Cumar EX	lb.	.045
MH	lb.	.06 /$0.11
V	lb.	**.09** / **.12**
Silene	lb.	.04 / .045

Reodorants

Amora A	lb.		
B	lb.		
C	lb.		
D	lb.		
Curodex 19	lb.		
188	lb.		
198	lb.		
Para-Dors	lb.		
Rodo No. 0	lb.	4.00 /	4.50
10	lb.	5.00 /	5.50

Rubber Substitutes

Black	lb.	**.08** /	**.13**
Brown	lb.	.08 /	.125
White	lb.	.085 /	.135
Factice			
Amberex Type B	lb.	**.1875**	
Brown	lb.	.09 /	.13
Fac-Cel B	lb.	.15	
C	lb.	.15	
Neophax A	lb.	.1275	
B	lb.	.1275	
White	lb.	.10 /	.15

Softeners and Plasticizers

B.R.T. No. 7	lb.	**.0165/**	**.0175**
Bondogen	lb.	.98 /	1.05
Burgundy pitch	lb.		
Copene Resin	lb	.30	
Cycline oil	gal.	**.14** /	**.20**
Dipolymer Oil	gal.	**.30** /	**.35**
Dispersing Oil No. 10	lb.	**.0335/**	**.036**
Nevinol	lb.	**.13** /	**.14**
Nuba resinous pitch (*drums*)			
Grades No. 1 and No. 2	lb.	.029	
3-X	lb.	.0425	
Nypene Resin	lb.	.30	
Palm oil (Witco), *c.l.*	lb.		
Palmol	lb.	.15	
Para Flux	gal	.09 /	.18
No. 2016	gal.	.125 /	**.20**
Para Lube	lb.	.0425/	**.048**
Piccolyte Resin	lb.	.14 /	.175
Pine tar	gal.		
Oil	gal.		
Plastogen	lb.	.0775/	.08
Plastone	lb.	.27 /	.30
R-19 Resin (*drums*)	lb.	.105	
21 Resin (*drums*)	lb.	.105	
Reogen	lb.	.12 /	.18
RPA No. 1	lb.	.65	
2	lb.	.65	
3	lb.	**.46**	
4	lb.	**.80**	
Tackol	lb.	.085 /	.18
Tonox	lb.	.52 /	.61
Tonox D	lb.	.75 /	.85
Witco No. 20, *l.c.l.*	gal.	.20	
X-1 resinous oil (*tank car*)	lb.	.011	

Softeners for Hard Rubber Compounding

Resin C Pitch 45° C. M.P.	lb.	**.013** /	**.014**
60°C. M.P.	lb.	**.013** /	**.014**
75°C. M.P.	lb.	**.013** /	**.014**

Solvents

Beta-Trichlorethane	lb.	.20	
Carbon Bisulphide	lb.		
Tetrachloride	gal.		
Cosol No. 1	gal.	.32	
No. 2	gal.	.32	
No. 3	gal.	.30	
Industrial 90% benzol (*tank car*)	gal.	**.14** /	**.21**
Medium Ketone	gal.	.35 /	.50
Skellysolve	gal.		

Stabilizers for Cure

Calcium Stearate	lb.	**.23** /	**.25**
Laurex (*bags*)	lb.	.13 /	.155
Lead Stearate	lb.		
Stearex B	lb.	.1375/	.1475
Beads	lb.	.1325/	.1425
Stearic acid, single pressed	lb.	.1375/	.1475
Stearite, *c.l.*	lb.	.1325	
Zinc stearate	lb.	.27 /	.28

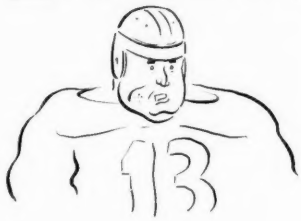
Synthetic Rubber

Hycar O. R.	lb.	.70 /	1.00
Neoprene Type CG	lb.	.70	
E	lb.	.65	
FR	lb.	.75	
G	lb.	**.70**	
GN	lb.	**.65**	
I	lb.	**.70**	
KN	lb.	**.75**	
M	lb.	**.65**	

†Price quoted is f.o.b. works (bags). The price f.o.b. works (bulk) is $0.0315 per pound. **All prices are carlot.**

(*Continued on page* 88)

Ask him about *Double-wing backs*



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METALLIC STEARATES

As specialists in Metallic Stearates, let us help you solve any problems connected with their use in your business. We manufacture:

CALCIUM STEARATES ALUMINUM STEARATES
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Manufacturers of Chemicals
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53 *Years' Experience*

In Manufacturing
Rubber Mill Equipment of the
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Laboratory and Production

CALENDERS	WASHER CUTTERS
MILLS	PACKING CUTTERS
WASHERS	BAND CUTTERS
REFINERS	JAR RING LATHES
PRESSES	VULCANIZERS

ALL TYPES OF CUSTOM-BUILT EQUIPMENT

We will gladly submit quotations and specifications to your requirements.

Wm. R. Thropp & Sons Co.
TRENTON, N. J. EST. 1888

Regular and Special Constructions
of
COTTON FABRICS

Single Filling **Double Filling**
and
ARMY
Ducks

HOSE and BELTING
Ducks

Drills

Selected
Osnaburgs

Curran & Barry
320 BROADWAY
NEW YORK

COTTON AND FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	July 26	Aug. 30	Sept. 6	Sept. 13	Sept. 20
Sept.	17.16	16.85	17.34	17.78	.....
Oct.	.....	16.99	17.50	17.89	16.96
Dec.	17.39	17.16	17.69	18.08	17.18
Mar.	17.51	17.39	17.88	18.29	17.39
July	.....	17.40	17.97	18.44	17.53

New York Quotations

September 23, 1941

Drills		
38-inch 2.00-yard	yd.	$0.21
40-inch 3.47-yard		.13
50-inch 1.52-yard		.28⅝
52-inch 1.85-yard		.24
52-inch 1.90-yard		.23⅜/.23¾
52-inch 2.20-yard		.21½
52-inch 2.50-yard		.18⅞
59-inch 1.85-yard		.24
Ducks		
38-inch 2.00-yard D. F.	yd.	.20½/.21¾
40-inch 1.45-yard S. F.		.29
51½-inch 1.35-yard D. F.		.29⅝
72-inch 1.05-yard D. F.		.41 /.46
72-inch 17-21 ounce		.51½
Mechanicals		
Hose and belting	lb.	.44½
Tennis		
51½-inch 1.35-yard	yd.	.33
51½-inch 1.60-yard	yd.	.28⅛
51½-inch 1.90-yard	yd.	.23⅛
Hollands—White		
Blue Seal		
20-inch	yd.	.11¾
30-inch		.20¼
40-inch		.22½
Gold Seal		
20-inch No. 72	yd.	.12
30-inch No. 72		.21½
40-inch No. 72		.24
Red Seal		
20-inch	yd.	.12¾
30-inch		.22½
40-inch		.25½
Osnaburgs		
40-inch 2.34-yard	yd.	.17⅝
40-inch 2.48-yard		.17
40-inch 2.56-yard		.14¼
40-inch 3.00-yard		.14⅛
40-inch 7-ounce part waste		.13⅛
40-inch 10-ounce part waste		.18¾
37-inch 2.42-yard clean		.17
Raincoat Fabrics		
Cotton		
Bombazine 64 x 60	yd.	.11¾
Plaids 60 x 48		.13½
Surface prints 64 x 60		.15½
Print cloth, 38½-inch, 64 x 60		.08037
Sheetings, 40-Inch		
48 x 48, 2.50-yard	yd.	.14200
64 x 68, 3.15-yard		.12063
36 x 60, 3.60-yard		.10555
44 x 40, 4.25-yard		.08588
Sheetings, 36-Inch		
48 x 48, 5.00-yard	yd.	.07600
44 x 40, 6.15-yard		.06178
Tire Fabrics		
Builder		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.38
Chafer		
14 ounce 60" 20/8 ply Karded peeler	lb.	.37½
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.37
Cord Fabrics		
23/5/3 Karded peeler, 1 1/16" cotton	lb.	.38½
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.36½
12/4/2 Karded peeler, 1 1/16" cotton	lb.	.35½
23/5/3 Karded peeler, 1¼" cotton	lb.	.43
23/5/3 Combed Egyptian	lb.	.57½
Leno Breaker		
8⅛ ounce and 10¼ ounce 60" Karded peeler	lb.	.40

AFTER closing at 17.57¢ per pound on August 30, the New York 1 1/16-inch spot middling price advanced to 18.61¢ per pound on September 9, and then gradually declined to 17.69¢ per pound on September 20. After that the price moved lower to reach 17.18¢ per pound September 27. All active cotton futures crossed the 18¢ mark on September 9, reaching the highest levels since November, 1929.

A cotton crop of 10,710,000 bales, based on a condition of 65% as of September 1, was forecast by the Crop Reporting Board of the United States Department of Agriculture. This indicates an average yield of 226.8 pounds per acre from an area of 22,633,000 acres.

Since American cotton exports have come to a virtual standstill, those of last year, 1,084,000 bales, being approximately one-sixth those of two years ago, the Commodity Credit Corp. took steps to rectify the situation on September 16 by releasing up to 1,500,000 bales of 1937 crop cotton to exporters before July 31, 1942, at a base price of 13¼¢ per pound for 1 1/16-inch middling at warehouse locations in the Carolinas.

The Bureau of the Census reported that 66,745 running bales of cotton were used in tire fabrics and cords during July, 1941. This is 7.2% of the total of 928,943 running bales used during that month. The percentages for June and May of this year were, respectively, 7.6% and 8.0%.

According to the Bureau of the Census, domestic consumption of cotton in August amounted to 874,113 running bales, against 928,943 bales in July and 650,888 bales in August, 1940. Cotton stocks in consuming establishments at the end of August were placed at 1,697,056 bales, and stocks in public storage and at compresses totaled 9,296,898 bales. The corresponding figures for July are, respectively, 1,874,187 bales and 9,704,095 bales; those for July, 1940, are 738,051 and 9,131,474 bales.

The current Mexican crop is expected to total 314,300 bales, as against 271,480 bales in 1940, it was reported September 1 by the United States Department of Commerce.

Fabrics

During the past month buyers and sellers in the cotton textiles market waited for the Office of Price Administration to announce officially the detailed sliding scale for cotton textiles which will replace the fixed ceilings previously placed by the OPA on several classes of gray goods. This new action by the OPA, which probably will limit fluctuations of cotton textile prices so that they will be commensurate with the price variations of raw cotton, is said to be the result of rising cotton costs.

Meanwhile demand for cotton textile goods was increasingly active last month, and it is reported that stocks which have been kept for from one to two months have now been consumed in addition to the goods produced during the same period. It is predicted that transactions will soon be on the basis of early delivery rather than price. Business is still being offered for the first quarter of 1942, and it is felt that the present tightness will continue for some months; buyers are necessarily using stocks they have on hand. No sheetings were offered for sale during August, it was reported, pending price action by the OPA.

The market is strong, and the majority of fabric constructions listed have advanced in price, with the increase in tire fabrics amounting to 1¢ per pound.

Financial

(Continued from page 68)

half, 1941: net profit, $440,955, or 81¢ a share, against $274,090, or 45¢ a share, last year.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. March quarter: net profit, $5,627,264, equal to $2.10 each on the combined 79,974 shares of 7% preferred and 2,592,155 shares of common, against $4,041,429, equal to $1.51 a share, in the March quarter of 1940; provision for federal income taxes, $4,587,043, and excess profits tax, $3,652,372, against normal federal taxes of $1,196,634 in the same period last year; unfilled orders, $285,136,048, against $82,637,851; orders booked, $145,620,948, against $65,250,169; sales billed, $81,141,645, against $51,448,038. First half, 1941: consolidated net profit, $11,568,401, equal to $4.33 a share, against $9,837,012, or $3.68 a share, the first half of 1940; provision for normal federal taxes, $8,395,264, and for excess profit tax, $9,239,528, against normal taxes of $2,942,110 the first six months last year; unfilled orders, $341,265,794, against $86,386,749; orders booked, $301,126,952, against $135,556,693; sales billed, $175,557,093, against $115,488,876. Year ended June 30, 1941: net profit, $20,716,817, or $7.75 a share, against $17,352,590, or $6.49 a share; orders booked, $566,047,983, against $245,256,874; sales billed, $299,499,664, against $202,843,336.

Current Quotations

(Continued from page 86)

Synthetic Rubber (Cont'd)			
Neoprene Latex Type 56	lb.	$0.30	
57	lb.	.30	
Synthetic 100	lb.	.41	
"Thiokol" Type "A"	lb.	.35	/$0.45
"F"	lb.	.45	/ .55
"FA"	lb.	.50	/ .60
"RD"	lb.	.75	
Tackifier			
B.R.H. No. 2	lb.	.017 / .02	
Vulcanizing Ingredients			
Magnesia, light (for neoprene)	lb.		
Sulphur	100 lbs.	2.00	
Chloride (*drums*)	lb.	.04	
Telloy	lb.	1.75	
Vandex	lb.	1.75	
(See also Colors—Antimony)			
Waxes			
Carnauba, No. 3 chalky	lb.		
2 N.C.	lb.		
3 N.C.	lb.		
1 Yellow	lb.		
2	lb.		

IRON MEN—*New Style*

OLDEST Navy legend, dealing with past glories, tells of Iron Men in wooden ships. But no observer of the modern Navy can deny all hands the title of "Iron" though ships themselves have changed to steel. Especially does this description apply to our modern sailors of the air.

As partial evidence, see records which show that the United States gets planes off and on carrier 3 times as fast as any other Navy, and which rate American Naval aviators as the world's best flyers.

But it takes plenty of cotton to keep them flying. For instance, in the foreground above the two pilots chatting over this morning's maneuver are wearing cotton uniforms—all their visible equipment is cotton, except for helmets and goggles. Behind them a Naval flying cadet, less nonchalant, joins two Chief Petty Officers in watching a scout observation plane as it catapults from the battleship. This group, as well as all hands on board, are wearing cool, comfortable uniforms of cotton.

★ ★ ★

In the modern Navy, cotton is still No. 1 defense requirement for sailors' comfort and protection. This, in turn, means that the supply of many of our fabrics, including HOSE AND BELTING DUCKS, OSNABURGS, etc., normally available to you will be somewhat limited during the present emergency.

WELLINGTON SEARS COMPANY, 65 Worth St., New York City

Cottons FOR DEFENSE...WELLINGTON SEARS FOR *Cottons*

OPM Reorganized

(Continued from page 60)

the plants which are included in the original order.

Because of the great importance to the defense program and to civilian welfare of the continued effective operation of textile mills, Mr. Nelson on September 16 announced Preference Rating Order, P-53, granting the assistance of an A-10 rating to manufacturers of maintenance and repair parts for textile machinery.

Manufacturers of arc welding and resistance welding equipment are given the assistance of an A-1-c preference rating in an order signed by the director of priorities on September 12. The high defense rating assigned is applicable only to materials used in the production of defense equipment. Included in these materials are insulating materials and sheets, bars, rods, plates, and wire, ferrous and non-ferrous.

Priorities Division Announcements

The following is a full list, as of September 2, of chemicals under full mandatory priority control: chlorine; formaldehyde; paraformaldehyde; hexamethylenetetramine; chlorinated hydrocarbon refrigerants; ethyl alcohol and related compounds; methyl alcohol; potassium perchlorate; potassium permanganate; toluene; tricresyl and triphenyl phosphates; phenols; and phosphorous oxychloride. Synthetic resins also are under mandatory priority control.

In recognition of the great importance of scientific research to defense and to the public at large, the Director of Priorities recently granted the high defense priority rating of A-2 to equipment needed by research laboratories.

The Director of Priorities on August 25 announced the Health Supplies Rating Plan to assure a plentiful flow of essential health supplies into civilian channels and for military use. Included in the list of 14 categories covering medical, surgical, and dental essentials necessary to public health to which an A-10 rating may be assigned are: adhesive plasters, anaesthesia apparatus and supplies, hospital operating room equipment, hypodermic syringes and needles, rubber hospital sundries, and also surgical dressings.

The OPM on August 27 revamped the form of all its priority orders making it mandatory for producers to accept all defense orders even if non-defense orders already booked must thereby be cancelled. In addition a set of rules in "Priorities Regulations No. 1" establishing provisions and definitions applicable to the operations of the priorities system, warns of punishments to any person wilfully evading them.

Mr. Nelson on September 10 issued Priorities Regulation No. 2 which provides, among other details, the regulation making all preference ratings mandatory. This new legal power will prove a great assistance in effecting strict enforcement of all priority rules and regulations.

Certificates of Necessity

National Defense Advisory Committee, Washington, D. C., included among its recent listings of Certificates of Necessity for plant expansion the following: American Chain & Cable Co., Inc., facilities for tire chains and cotter pins, at an estimated cost of $37,000; Anaconda Wire & Cable Co., cable and wire, $44,000; Barrett Co., beta picoline, $31,000; Bolta Co., foot tubs and trays, $5,000; Chicago Rubber Clothing Co., rubberized fabrics, $2,000; Collyer Insulated Wire Co., cable, $25,000; E. I. du Pont de Nemours & Co., Inc., aniline, detonators, diphenylamine, lead oxide, and T. N. T. blocks, $179,000; Farrel-Birmingham Co., Inc., propulsion and aircraft engine reduction units, $228,000; Firestone Tire & Rubber Co., carriage assemblies for anti-aircraft guns, $570,000; Hewitt Rubber Corp., leakproof material, $40,000; Monsanto Chemical Co., chemicals, oil, and synthetic fibers, $2,259,000; Pittsburgh Plate Glass Co., calcene and chlorine, $2,841,000; Rockbestos Products Corp., cable, $175,000; Schacht Rubber Co., track blocks for tanks, $65,000; Timken Roller Bearing Co., electric furnace steels and roller bearings, $1,521,000; U. S. Rubber Co., foam sponge cushions, $1,000.

Certification enables manufacturers to avail themselves of the 60-month tax amortization plan. Certification, however, does not mean that such expansion will necessarily occur.

War Department, Washington, D. C., on September 3 announced that an agreement of lease had been made by the Defense Plant Corp. with Air Cruisers, Inc., for additional plant facilities at or near Clifton, N. J., for the manufacture of barrage balloons. The site and buildings are estimated to cost $253,942. The War Department on September 16 awarded to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., an $84,235,594 contract for the construction and operation for one year of the Oklahoma Ordnance Works, Choteau, Okla. Its principal products will be smokeless powder and diphenylamine.

The Navy Department, Washington, D. C., on September 18 announced that Edward B. Germain, president of the Dunlop Tire & Rubber Corp., Buffalo, N. Y., had been made president and general manager of Ships, Inc., the new government corporation formed to supervise production of the new automotor freighter fleet, new type of cargo ships designed along revolutionary lines for mass production.

HR 5417, the $3,553,400,000 revenue bill signed September 20 by President Roosevelt, lists numerous so-called nuisance taxes, effective October 1, including: increases from 2½¢ to 5¢ a pound on tires and from 4½¢ to 9¢ a pound on inner tubes; 10% manufacturers excise tax on sporting goods and rubber articles, excluding footwear and hospital and surgical goods.

A.S.T.M. Standards

(Continued from page 55)

are to be incorporated in the chemical analysis of rubber products (D297-40T), providing for more specific instructions in sampling and adding an alternate extraction apparatus which is smaller and permits more accurate weighing.

Committee E-10 also approved changes involving rearrangements of material in the Standard Methods of Testing Molded Materials used for electrical insulation (D48-39). New standards, sponsored by Committee D-20 on Plastics, which were approved by Committee E-10 for the Society cover the following: flammability test for plastic materials thicker than 0.050-inch (D635-41T); test for surface irregularities of flat transparent plastic sheets (D637-41T); test for diffusion of light by plastics (D636-41T); and test for tensile properties of plastics (D638-41T).

A.S.M.E. to Hear Talks on Rubber, Plastics

THE fall meeting of the American Society of Mechanical Engineers will be held in Louisville, Ky., October 12 to 15, with headquarters at the Brown Hotel. At the meeting of the Rubber and Plastics Division, Monday morning, October 13, W. B. Hoey will deliver a paper entitled "Design and Performance of Plastic Parts", and O. M. Hayden will speak on "The Provision of Production Facilities for Synthetic Rubber."

Four papers will be read at the meeting of the Rubber and Plastics Subdivision to be held at the Astor Hotel, New York, N. Y., December 1 to 5, as part of the national meeting of the A.S.M.E. The papers are: "Practical Aspects of Vibration Isolation" by W. C. Keyes, of United States Rubber Co.; "Advances in Rubber and Plastics during 1941", the Committee report; "The Uses of Plastics in Various Ways in Airplane Construction" by H. N. Haut, of Bellanca Aircraft Corp.; and "Plastics" by G. E. Landt, of Continental Diamond Fibre Co.

Tire and Track Development Discussed at S.A.E. Meeting

THE National Tractor Meeting of the Society of Automotive Engineers was held in Milwaukee, Wis., at the Schroeder Hotel, September 25 and 26. The following papers were scheduled for presentation at the morning session on September 26, under the chairmanship of Less Pfost, of Massey-Harris Co.: "What the Designer Should Know About Tires for Earth Moving Equipment", by Walter Lee, of the Goodyear Tire & Rubber Co.: "What the User Should Know About Tires for Earth Moving Equipment", by L. W. Fox, of The Firestone Tire & Rubber Co.; and "The 'Square Wheeled' Tractor Goes to Town", by R. Mayme and H. W. Delzell, of The B. F. Goodrich Co.

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Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge*

SITUATIONS WANTED

PRACTICAL RUBBER CHEMIST, 12 YEARS' EXPERIENCE COMpounding and processing for tires, mechanical and proofed goods, involving natural rubber and all synthetics. Also experienced with latex, airfoam sponge, and dipped goods. Ph.D. Have held supervisory positions. Location immaterial. Address Box No. 321, care of INDIA RUBBER WORLD.

RUBBER CHEMIST. 3 YEARS' EXPERIENCE IN compounding of rubber and synthetics, plant and laboratory management, molding, processing problems. Desires responsible position. Location immaterial. Address Box No. 322, care of INDIA RUBBER WORLD.

PRODUCTION MANAGER, CHEMIST, YOUNG, 10 YEARS' EXperience, now holding responsible position. Desires position where a capable man can progress. Address Box No. 324, care of INDIA RUBBER WORLD.

RUBBER ENGINEER AND PRODUCTION MAN, 20 YEARS' EXperience in rubber and synthetic rubber, mechanical goods and proofing. Expert in balloon fabric coating specifications and other coated fabrics. Competent low-cost compounder and capable foreman. Thorough knowledge using reclaimed rubber. Address Box No. 325, care of INDIA RUBBER WORLD.

CHEMIST (B.S.)—FOUR YEARS' EXPERIENCE IN GENERAL rubber compounding and technical service on factory production problems. Excellent scholastic record. Address Box No. 326, care of INDIA RUBBER WORLD.

GRADUATE CHEMICAL ENGINEER, B.Sc. TWENTY-EIGHT years' experience. Sixteen years chief chemist and technical superintendent. Last eight years on research. Will make sacrifice to get back in the manufacturing of mechanical rubber goods. Would desire factory compounding and processing along with laboratory work. Would like to install a reclaiming department. Can take complete charge. Will help on sales if desired. Address Box No. 327, care of INDIA RUBBER WORLD.

LATEX CHEMIST WITH SEVEN YEARS' EXPERIENCE IN latex research and production wants position. Also synthetics and reclaims. Location no object. Address Box No. 333, care of INDIA RUBBER WORLD.

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EXPERIENCED SALESMAN TO HANDLE ROLLS, MOLDED goods, and extruded parts in New York City and New England. State all qualifications and apply to Box No. 323, care of INDIA RUBBER WORLD.

WANTED: SHOP FOREMAN FAMILIAR WITH COMPOUNDING and manufacturing camelback and tire repair materials in small plant in New Jersey. State experience and salary expected. Address Box No. 328, care of INDIA RUBBER WORLD.

RUBBER RECLAIMING SPECIALIST REQUIRED for new factory under construction. Applicant must have expert knowledge of up-to-date methods. All communications strictly confidential. Address Box No. 335, care of INDIA RUBBER WORLD.

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WANTED: TO BUY, LEASE, OR BUY CONTROLLING INTEREST in small rubber factory, two to four mills, calender, tubing machine, presses and auxiliary equipment, etc. Give full particulars. Address Box No. 329, care of INDIA RUBBER WORLD.

FOR SALE: PLANT AT HUDSON, MASSACHUSETTS, FOR THE manufacture of rubberized fabrics. Address Box No. 332, care of INDIA RUBBER WORLD.

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CROWN CLAY

SOUTHEASTERN CLAY COMPANY

AIKEN, SOUTH CAROLINA

(Advertisements continued on page 93)

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The Patten Air Lift Machine will cut 3,500 to 6,000 pairs of taps or soles, from unvulcanized sheet rubber, in eight hours, producing a uniformly cut sole or tap with any beveled edge from 30° to 90°.

Standard type for cutting soling to ½ inch thick and Heavy Duty type for solings to over one inch thick.

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BROOKLYN COLOR WORKS, INC.

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Imports by Customs Districts

	June, 1941 *Crude Rubber Pounds	June, 1941 *Crude Rubber Value	June, 1940 *Crude Rubber Pounds	June, 1940 *Crude Rubber Value
Massachusetts	14,783,244	$2,693,720	8,479,435	$1,509,172
New York	80,962,097	14,812,077	81,547,708	14,397,845
Philadelphia	526,026	93,080	1,814,117	292,725
Maryland	11,815,329	2,106,923	9,890,495	1,158,380
Mobile	.....	.....	60,480	9,557
New Orleans	9,231,919	1,582,446	3,897,390	672,118
Galveston	33,511	4,650	112,739	20,032
Laredo	51,800	4,616	.....	.....
San Antonio	.....	.....	88,000	9,892
El Paso	.....	.....	99,600	8,625
Los Angeles	22,934,050	4,179,618	13,839,656	2,365,082
San Francisco	1,047,138	188,487	769,055	135,149
Oregon	67,200	13,552	.....	.....
Ohio	2,667,485	436,712	531	103
Colorado	533,120	87,510	112,000	19,865
Totals	144,652,919	$26,203,391	120,711,206	$21,098,545

* Crude rubber including latex dry rubber content.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co...	8% Pfd.	$2.00 q.	Sept. 30	Sept. 19
Anaconda Wire & Cable Co...	Com.	$0.50	Oct. 20	Oct. 10
Baldwin Rubber Co.	Com.	$0.125	Oct. 21	Oct. 15
Canadian General Electric Co., Ltd.	Com.	$2.00 q.	Oct. 1	Sept. 13
Collyer Insulated Wire Co...	Com.	$0.50 irreg.	Oct. 1	Sept. 24
Corduroy Rubber Co.	Pt. Pfd.	$2.00	Sept. 15	Sept. 5
Crown Cork International Corp.	"A"	$0.10	Oct. 1	Sept. 22
Detroit Gasket & Mfg. Co...	Com.	$0.25	Oct. 20	Oct. 6
Electric Hose & Rubber Co...	Com.	$5.00 irreg.	Aug. 22	Aug. 15
Faultless Rubber Co.	Com.	$0.25 q.	Sept. 12	Oct. 1
Firestone Tire & Rubber Co..	Com.	$0.25	Oct. 20	Oct. 4
Garlock Packing Co.	Com.	$0.75	Sept. 30	Sept. 20
General Electric Co.	Com.	$0.35	Oct. 25	Sept. 19
General Electric, Ltd.	Com.	$0.342 final	Sept. 4	July 29
General Tire & Rubber Co...	Com.	$0.50	Oct. 30	Oct. 20
General Tire & Rubber Co...	6% Pfd.	$1.50 q.	Sept. 30	Sept. 20
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	$0.62 q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Pfd.	$0.625 q.	Oct. 1	Sept. 15
Hewitt Rubber Co.	Com.	$0.25 q.	Sept. 15	Aug. 30
Jenkins Bros.	Com.	$0.50	Sept. 25	Sept. 12
Jenkins Bros.	Fdrs.	$2.00	Sept. 25	Sept. 12
Jenkins Bros.	Pfd.	$1.75 q.	Sept. 25	Sept. 12
Lee Rubber & Tire Corp.	Com.	$0.25	Oct. 28	Oct. 15
Mansfield Tire & Rubber Co..	Com.	$0.25 irreg.	Sept. 20	Sept. 10
Mansfield Tire & Rubber Co..	$1.20 Cv. Pfd.	$0.30 q.	Oct. 1	Sept. 15
Ohio Rubber Co.	Com.	$5.00	Sept. 25	Sept. 20
Pahang Rubber	Com.	$0.10 q.	Sept. 30	Sept. 20
Rome Cable Corp.	Com.	$0.15	Oct. 1	Sept. 11
Seiberling Rubber Co.	Pt. Pfd.	$0.62 q.	Oct. 1	Sept. 20
Seiberling Rubber Co.	Pfd. "A"	$1.25 q.	Oct. 1	Sept. 20
United Elastic Corp.	Com.	$0.25	Sept. 24	Sept. 4
United States Rubber Co....	8% Non-Cv. Pfd.	$4.00	Sept. 29	Sept. 17

Advertisement

For greater resistance to the effects of aging, Madame should use HYCAR.

See page 107

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: 1—Watson-Stillman Hydro-Pneumatic Accumulator; 1—5 ft. dia. Vulcanizer, with quick-opening door; 20-Semi-automatic Hydraulic Presses; 1—Birmingham 16″x36″ Rubber Mill, m.d.; 12—30″x40″, 1—38″x78″ Hydraulic press; Hydraulic Pumps, Calenders, Tubers, etc. CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

FOR SALE: 2—Royle No. 1 Tubers; 1—Mikro No. 2-F Pulverizer; 5—Werner and Pfleiderer Mixers, from Lab. to 200 gal.; Dryers; Hydraulic Pumps; Accumulators; etc. We are cash buyers of your surplus equipment. Send us your list. BRILL EQUIPMENT CORPORATION, 183 Varick Street, New York City.

FOR SALE: 2—W.&P. JACK. MIXERS, SIZE 15; 1—TWO-ROLL Water-Cooled Rubber Mill, 6″ & 8″ dia. x 9″ face; 75-foot Link Belt Conveyer, 36″ wide; Hydraulic Presses, Pumps, and Accumulators, Rubber Mills, Mixers, Grinders, Pulverizers, etc. Send for latest bulletins. We buy your surplus equipment. STEIN EQUIPMENT CORP., 426 BROOME ST., NEW YORK CITY.

FOR SALE: 1—4′ DIAMETER BY 50′ VULCANIZER WITH QUICK-opening door; 1—4′ by 16′ Vulcanizer, quick-opening door; 1—jacketed pot-type Vulcanizer, 5′ by 5′, quick-opening door; 1—10″ Erie Strainer; 4—7″ Allen Strainers; 1—4-roll Calender; Hydraulic Presses; Pumps and Accumulators. Address Box No. 330, care of INDIA RUBBER WORLD.

FOR SALE: 3—WESTINGHOUSE TYPE CW 250 HORSEPOWER, 550-volt motors, speed 575; 1—Westinghouse type CW 250 horsepower, 440-volt motor; 1—3,000 ampere switch; 2—1,200 ampere switches; 2—600 ampere switches; 2—500 ampere switches. Address Box No. 331, care of INDIA RUBBER WORLD.

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WANTED FOR USER: ONE NO. 3 OR NO. 9 BANBURY MIXER; 3—Mills; 1—Calender; 5—Hydraulic Presses, with pumps and accumulators; 2—Tubers. No dealers. Address Box No. 334, care of INDIA RUBBER WORLD.

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DRESS SHIELDS
DRESS SHIELD LININGS
BABY PANTS
BABY BIBS & APRONS
SANITARY WEAR
RUBBERIZED SHEETING
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STOCKINET SHEETS
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ERIC BONWITT — AKRON, OHIO

New Rubber Spreaders, Churns, Pony Mixers, Saturators.
Used — Rebuilt — Rubber — Chemical — and Paint Machinery.

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Sponge Rubber: Sheeted—Die Cut—Molded
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THE BARR RUBBER PRODUCTS COMPANY
SANDUSKY, OHIO

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Operating, Globe, Angle, or Check Valves—Hydraulic Presses, Accumulators, Pumps, etc. —For almost any size or pressure.

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VULCANIZERS, ACCUMULATORS

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CUTTING MACHINES, PULVERIZERS

UNITED RUBBER MACHINERY EXCHANGE

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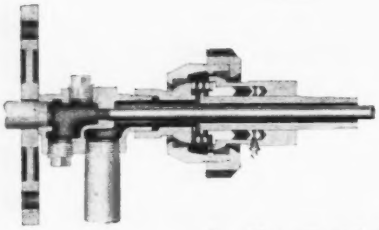
MAINTENANCE FOR HEATING
AND COOLING ALL TYPES
OF
ROLLS
DRUMS
AND
DRYERS



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(U.S.P. technical and special grades)

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CHICAGO OFFICE: Harry Holland & Son, Inc. 400 W. Madison St.
ST. LOUIS OFFICE: G. S. Robins & Company 126 Chouteau Ave.

Salient Statistics of Carbon Black Produced from Natural Gas in United States, 1937-40[1]

	1937	1938	1939	1940
Number of producers reporting	24	24	22	22
Number of plants	57	55	49	51
Quantity produced:				
By States and districts:				
Louisiana ..... *pounds*	66,381,000	39,534,000	51,734,000	55,610,000
Texas:				
Panhandle district *pounds*	405,247,000	382,369,000	410,130,000	423,908,000
Rest of State... *pounds*	15,821,000	34,735,000	43,044,000	55,987,000
Total Texas.. *pounds*	421,068,000	417,104,000	453,174,000	479,895,000
Other States ..... *pounds*	23,157,000	20,401,000	20,258,000	33,287,000
Total United States, *pounds*	510,606,000	477,039,000	525,166,000	568,792,000
By processes:				
Channel process... *pounds*	444,427,000	441,284,000	464,588,000	491,765,000
Other processes*.. *pounds*	66,179,000	35,755,000	60,578,000	77,027,000
Stocks held by producers, Dec. 31 ..... *pounds*	100,497,000	166,159,000	130,792,000	169,587,000
Losses ..... *pounds*	76,000	65,000†	.....	223,000
Quantity sold:				
Domestic deliveries:				
To rubber companies, *pounds*	269,584,000	217,231,000	316,621,000	310,179,000
To ink companies.. *pounds*	18,116,000	14,131,000	21,929,000	24,159,000
To paint companies. *pounds*	6,159,000	4,229,000	6,382,000	6,806,000
For miscellaneous purposes ..... *pounds*	11,503,000	7,883,000	11,773,000	11,012,000
Total domestic sold ..... *pounds*	305,362,000	243,474,000	356,705,000	352,156,000
Export ..... *pounds*	184,253,000	167,968,000	203,828,000	177,618,000
Total sold..... *pounds*	489,615,000	411,442,000	560,533,000	529,774,000
Value (at plants) or carbon black produced:				
Total	$17,389,000	$11,486,000	$12,857,000	$16,510,000
Average per pound.... *cents*	3.41	2.41	2.45	2.90
Estimated quantity of natural gas used..... *M cubic feet*	341,085,000	324,950,000	347,270,000	368,802,000
Average yield of carbon black per M cubic feet ..... *pounds*	1.50	1.47	1.51	1.54
Average value of natural gas used per M cubic feet ..... *cents*	1.26	.89	.94	1.00

[1] From the chapter "Carbon Black" by G. R. Hopkins and H. Backus in "Minerals Yearbook Review of 1940." United States Government Printing Office, Washington, D. C., 1941.
*Lewis, roller, "special", and thermatomic.
†Gain.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	Commodity	City and Country
712	Fountain pens and steel pen nibs	Heliopolis, Egypt
717	Bicycle tires and tubes	Cairo, Egypt
718	Semihard rubber capsules	Cairo, Egypt
719	Elastic fabrics	Istanbul, Turkey
743	Cadmium red for use in dental rubber articles	Barcelona, Spain

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Sole Licensed Sellers
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Submit inquiries for low quotations.

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does not mean cotton fiber alone

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EXPERIENCE
over twenty years catering to rubber manufacturers

CAPACITY
for large production and quick delivery

CONFIDENCE
of the entire rubber industry

KNOWLEDGE
of the industry's needs

QUALITY
acknowledged superior by all users are important and valuable considerations to the consumer.

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Write to the country's leading makers for samples and prices.

CLAREMONT WASTE MFG. CO.

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The Country's Leading Makers

Will you permit an expert to give your product the "once over lightly" . . . . . ?

In these times of turmoil don't overlook the fact that finishing techniques are changing almost as rapidly as geography. Yesterday's perfect finish may have whiskers today . . . in which case, it won't be long before that ol' dictator, Competition, cracks down. A check-up does no harm . . . incurs no obligation . . . may cut your finishing time, reduce your finishing costs and enhance the salability of your product. Address your inquiry to Department J.

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Friction Tape Production Doubled. Labor Costs Cut One Third

One of the largest manufacturers of friction tape and insulating tape products writes: "By the use of the CAMERON Machine, our cutting operation was speeded up; and, at the same time, a uniformly spaced and clean-cut edge was obtained. We find that, by the CAMERON method, our production has increased twofold with only ⅔ of the original labor required in this Department."

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ANTIMONY
FOR RED RUBBER

. . . . The utmost in pleasing appearance with no deteriorating effect whatever.

RARE METAL PRODUCTS CO.
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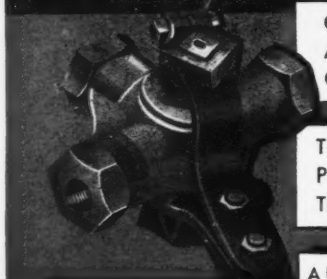

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THE HIGHER THE PRESSURE THE TIGHTER THE VALVE

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LONG TROUBLE-FREE LIFE LOW MAINTENANCE

QUARTER CENTURY OF SUCCESSFUL USE

Made in straightway, three-way and four-way types — Write for Bulletin H-2-C

YARNALL-WARING COMPANY
103 MERMAID AVENUE PHILA., PA.

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	July, 1941		Seven Months Ended July, 1941	
UNMANUFACTURED	Quantity	Value	Quantity	Value
Crude rubber, etc. ..... lb.	8,761,913	$1,912,208	62,381,635	$13,064,402
Latex (dry weight) ..... lb.	518,310	145,413	2,639,536	793,049
Gutta percha ..... lb.	2,240	504	11,182	6,051
Rubber, recovered ..... lb.	1,873,500	113,760	10,386,600	589,000
Rubber, powdered, and gutta percha scrap ..... lb.	700,800	12,284	3,215,000	66,419
Balata ..... lb.	2,822	1,586	35,006	9,734
Rubber substitute ..... lb.	47,600	15,641	326,500	102,743
Totals	11,907,185	$2,201,396	78,995,459	$14,631,398
PARTLY MANUFACTURED				
Hard rubber comb blanks	.....	$2,007	.....	$27,369
Hard rubber, n. o. s. ..... lb.	10,432	8,718	35,975	31,344
Rubber thread not covered. lb.	5,386	4,363	33,020	32,779
Totals	15,818	$15,088	68,995	$91,492
MANUFACTURED				
Bathing shoes ..... prs.	560	$114	34,883	$7,079
Belting	.....	19,110	.....	111,964
Hose	.....	30,585	.....	191,708
Packing	.....	10,790	.....	61,669
Boots and shoes ..... prs.	960	2,761	5,467	9,875
Canvas shoes with rubber soles ..... prs.	.....	.....	10,919	4,412
Clothing, including waterproofed	.....	2,703	.....	23,852
Raincoats ..... no.	6,138	21,027	35,334	120,698
Gloves ..... doz. prs.	12	50	998	3,820
Hot water bottles.....	.....	.....	.....	1,146
Liquid sealing compound	.....	13,301	.....	58,382
Tires, bicycle ..... no.	407	286	15,419	12,103
Pneumatic ..... no.	1,332	22,937	19,573	498,169
Solid for automobiles and motor trucks ..... no.	53	3,684	220	11,524
Other solid tires	.....	1,680	.....	15,685
Inner tubes ..... no.	251	1,078	13,559	46,969
Bicycle ..... no.	233	63	14,086	3,881
Mats and matting	.....	6,336	.....	70,015
Cement	.....	12,438	.....	86,275
Golf balls ..... doz. prs.	1,834	3,825	14,336	27,299
Heels ..... prs.	4,228	299	55,389	4,034
Other rubber manufactures..	.....	174,707	.....	1,477,708
Totals	.....	$327,774	.....	$2,848,267
Totals, rubber imports..	.....	$2,544,258	.....	$17,571,157

Exports of Domestic and Foreign Rubber Goods

	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude rubber	.....	.....	$73	.....
Waste rubber	$39,931	.....	163,285	.....
MANUFACTURED				
Belting	$34,848	.....	$251,016	.....
Bathing caps	1,500	.....	2,791	.....
Canvas shoes with rubber soles.	45,358	.....	233,347	.....
Boots and shoes	227,824	.....	934,115	.....
Clothing, including waterproofed	43,702	.....	162,686	.....
Heels	3,734	.....	12,905	.....
Hose	194,714	.....	1,725,897	.....
Soles	1,774	.....	7,761	.....
Soling slabs	1,195	.....	6,590	.....
Tires, pneumatic	461,727	.....	2,654,395	.....
Not otherwise provided for.	64,227	.....	623,924	.....
Inner tubes	48,757	.....	297,188	.....
Other rubber manufactures..	37,771	.....	259,003	.....
Totals	$1,167,131	.....	$7,171,618	.....
Totals rubber exports...	$1,207,062	.....	$7,334,976	.....

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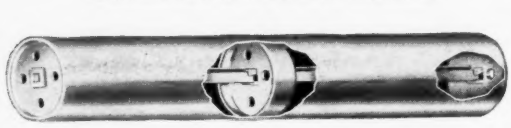
ALL STEEL ALL WELDED
CALENDER STOCK SHELL



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Compounds tailored to your special requirements

Technical Service is at your Disposal without charge or obligation

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For Fine Rubber Products Compounding . . .

EXACT WEIGHT Scale Model 42-A. For fine formulae control. Capacity to 1 lb. (500 grams)

Formulae for fine rubber goods are best batched by accurate pre-determined weight. Exact weights of each ingredient assures the correct formulae in practice each and every time, which in turn guarantees a uniform finished product. Guard against waste of expensive ingredients . . . be safe and use EXACT WEIGHT Scales, the leader in the field for these operations.

Write for complete information on compounding, counting by weight, and heavy batch mixing.

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INDUSTRIAL PRECISION SCALES

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. . . IT CAN NOW BE EQUIPPED WITH AUTOMATIC CONTROL

NEW — and more valuable than ever. For the past 13 years The Schuster Calender Gauge has proven itself an outstanding and indispensable instrument in the rubber industry. *Now* it automatically adjusts your rolls to a predetermined thickness and correctly maintains that thickness. Coatings for tire fabric and similar uses are kept accurate and uniform *automatically*. The result is a better product at a lower cost. Write us today for complete particulars.

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The Wisdom of Buying Direct is now — Well Proven —

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A Chronological Record of the Important Events in the History of Rubber

50c per Copy

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Hardness ● Elasticity
Plasticity of Rubber, etc.

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These are all factors vital in the selection of raw material and the control of your processes to attain the required modern Standards of Quality in the Finished Product. Universally adopted.

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MANUFACTURE
Molded Specialties, Plumbers' Rubber Goods, Valves, Gaskets, Hose Washers, and Cut Washers of all kinds

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Speed is economy in handling the huge quantities of scrap rubber that pass daily through our processing plants, and to attain this speed we have developed industrial mechanized units that are writing new chapters in the story of handling a vital material for defense and civilian production.

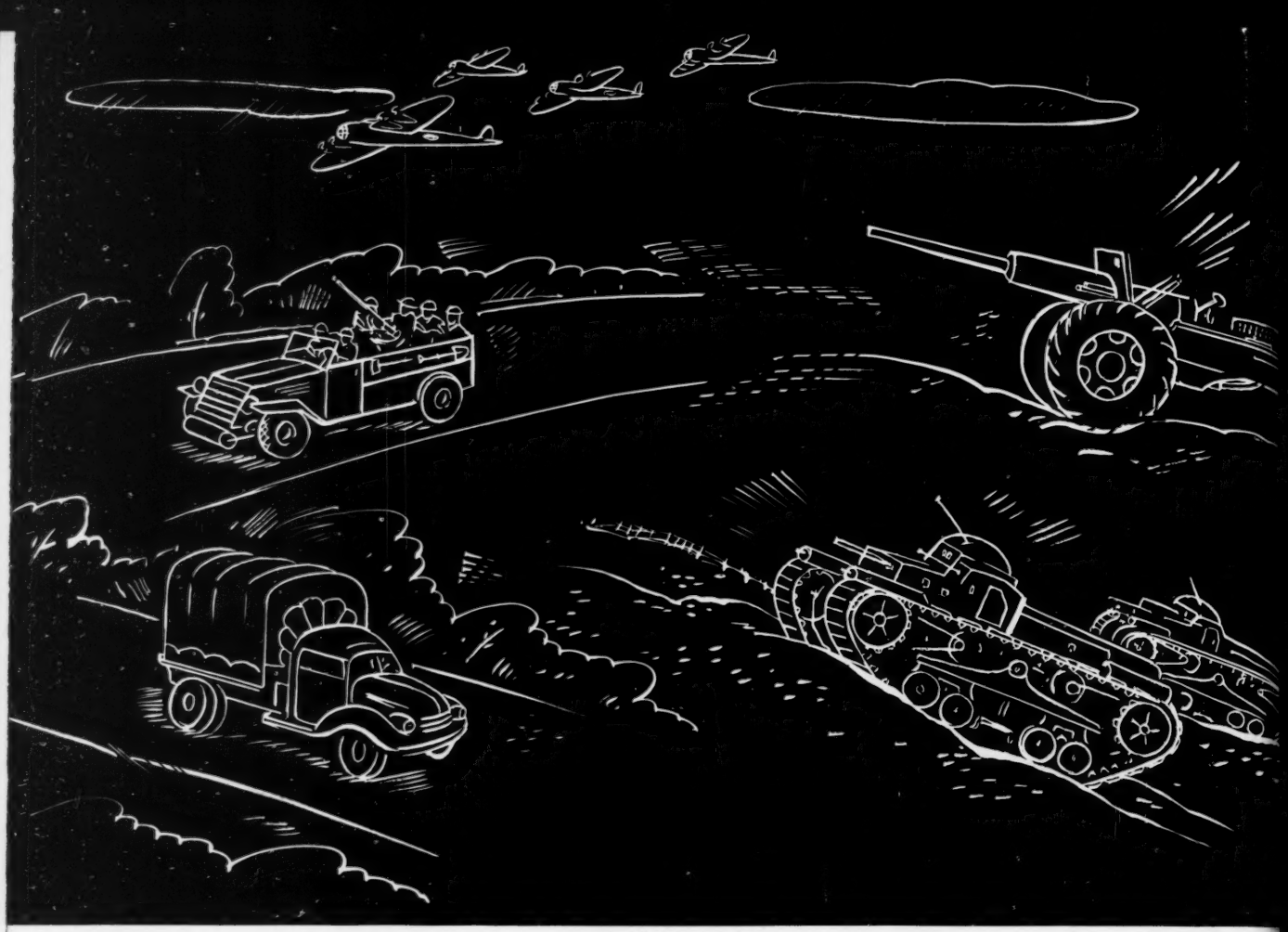
Drivers slam their sturdy little tractors and their trailer-loads of scrap in and out of box cars all day long . . . hauling mixed scrap into sorting rooms and processing departments . . . hauling the sorted, processed, ready-to-use scrap back to cars for shipment to reclaimers and processors.

This rapid handling enables us to do a better, faster job of sorting, processing and inspecting scrap rubber . . . a material upon which industry is depending more and more in the face of decreased crude rubber allotments.

A. SCHULMAN, INC.

AKRON, OHIO • E. ST. LOUIS, ILLINOIS • BOSTON, MASSACHUSETTS

CRUDE RUBBER
SCRAP RUBBER
HARD RUBBER DUST



DEFENSE *ROLLS* ON RUBBER

● Modern defense rolls on rubber. So does our modern peace-time activity. The rubber industry, as all other key industries, faces the problem of producing for defense without handicapping production for civilian use. Only through successfully doing BOTH can America maintain her standard of living and still arm herself at top speed.

This problem will task the ingenuity of almost every big industry. In its small way Climco offers aid to the rubber industry by simplifying the handling, storage, and separation of uncured stocks.

The Climco process, applied to ordinary cotton liners, enables them to receive tacky, even hot, uncured stock without being subject to adhesions. This eliminates stuck and torn areas, speeds up separation, and keeps the liner in uninterrupted service for a longer period of time.

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INTERLEAVING PAPER
Treatment Contains
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